

Requirements Management Tool Market Survey

February 3, 2000

1. Purpose and Scope

The purpose of this survey is to identify candidate tools that meet the requirements for Requirements Management for Project Offices within the System Integration Division of the Health and Human Services Agency Data Center (HHSDC). The requirements were defined by a Requirements Management Process Action Team (PAT) to support key activities to include:

- Requirements Definition
- Requirements Analysis
- Requirements Verification and Validation
- Requirements Documentation and Reporting
- Requirements Change Control
- Requirements Re-use
- Security

In addition, the PAT defined requirements for the tool environment, user interface, and vendor support. The detailed requirements are listed in Attachment 1. Tools that meet the mandatory requirements will be considered candidate tools and Aeon will request evaluation copies of those tools for the PAT. The results of the PAT hands-on evaluation will be presented in another report.

2. Concept of Operation

This tool must support the creation and tracking of system requirements for a Project Office. The state Project Office defines system requirements that are to be implemented by a prime contractor.

The Project Office will gather requirements from a number of sources. The primary sources are federal and State legislation, regulatory documents, policy directives, user inputs, and studies/analysis. The regulatory documents are created by controlling entities and will need to be parsed and input into the Requirements Tool. Users will help define Use Cases¹ and subsequent functional requirements. Studies and analysis may be done to define performance and quality requirements like availability, maintainability, etc. The tool would be able to extract and track requirements defined in the Use Cases, studies, and analysis. The regulatory and working documents in this process are typically created in MS Word. The tool must be able to update requirements when a source document is changed.

The prime contractor is responsible for tracing the requirements through requirements analysis, design, code, and testing. The Project Office verifies the prime contractor's requirements tracing. The preferred method would be for the Project Office to give the

¹ Use Cases describes a sequence of interactions between a system and an external "actor" that results in the actor accomplishing a task that provides benefit to someone. An actor is a person, another software application, a piece of hardware, or some other entity that interacts with the system to achieve some goal (Cockburn 1997). The purpose of Use Cases is document all the tasks the user will need to perform with the system.

Prime contractor the System Requirements Specification document and requirements database (created by this Requirements Tool) immediately following Contract Award. The prime contractor would import the requirements into their own requirements management tool and trace the requirements through the remainder of the life cycle. The Project Office would verify and validate the trace.

The Project Office is responsible for managing the system requirements. The Project Office will baseline the requirements at Contract Award. The Project Office will change or add requirements through their formal change control process. The Project Office will notify the prime contractor of approved changes and provide data to update the prime contractor's requirements management tool.

3. Evaluation Method

Aeon started by reviewing the tool survey produced by the International Council on System Engineering (INCOSE) at www.incose.org. Aeon collected additional information for the market survey of vendors using the internet, phone calls, and product marketing material.

The PAT assigned a priority to the requirements of high, medium, or low where:

- High – the requirement is essential to meeting business objectives and is a required feature for the product. Lack of this feature would eliminate the product from further consideration.
- Medium – Important to meeting business objectives. Lack of this feature would not eliminate the product from consideration, but would lower its standing relative to other products.
- Low – Enhances the business operation or product quality. Nice to have. Not having this requirement would not eliminate the product from consideration, but after the products were rated for the high and medium priorities and there are there was more than one product with comparable scores and price, this feature could be an additional consideration in favor of the product.

The candidate tools were compared to the requirements and priorities listed in Attachment 1.

4. Survey Results

There were eleven Requirements Management tools considered. Of these tools, Requisite Pro, Analyst Suite, and RDT met the requirements as shown in Table 1. The tools with asterisks by their name have additional evaluation information in the summary table in Attachment 1 and product evaluation reports (Click on the Tool name to view the product report).

Tool	Manufacturer	Result	Comment
Analyst Studio 1.5 *	Rationale	Pass	In addition to the mandatory features, this tool includes Rational Unified Process (knowledge base of software development best practices) and Rational Rose Modeler Edition (visual modeling tool).

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Caliber RM 2.0 *	Technology Builder	Fail	Not scaleable to single project, must by at least 10 seats.
CORE 2.0		Fail	System Engineering tool, not scalable to just requirements mgt.
Cradle / SEE 3.2		Fail	System Engineering tool, not scalable to just requirements mgt.
DOORS 4.0 *	QSS	Fail	Database not ODBC
QSS requireit 1.0 *	QSS	Fail	No database support
RDD -100 4.1.1		Fail	System Engineering tool, not scalable to just requirements mgt.
RDT 3.0 *	Igatech	Pass	Relatively new product, does not have large customer base.
Requisit Pro*	Rationale	Pass	None
XTie-RT*	Teledyne Brown	Fail	Database not ODBC; must purchase Crystal Reports for creating documents.

Table 1. Requirement Tool Market Survey Results

5. Recommendations

Obtain evaluation copies of the three candidate tools, Analyst Studio, Requisite Pro, and RDT, and let the PAT members perform a hands-on assessment.

Attachment 1
Requirements Management Tool Requirements
for HHSDC System Integration Division

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
1. Requirement Definition		Technology Builder	QSS	QSS	Igatech	Rationale	Rationale	Teledyne Brown
a. Shall be able to specify database fields to be included in requirements definitions	High	Yes	No	Yes	Yes	Yes	Yes	Yes
b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.	Medium	Yes	Yes	Yes	?	Yes	Yes	?
c. Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.	Medium	Yes	Yes	Yes	?	Yes	Yes	Yes
d. Shall support manual entry of requirements	High	Yes	Yes	Yes	Yes	Yes	Yes	Yes
i) Be capable of storing and editing the full text of requirement statements with basic word processor functions.	High	Yes	Yes	Yes	Yes	Yes	Yes	Partial
ii) Spell checking		Yes	Yes	Yes	Yes	Yes	Yes	No
iii) Shall ensure data integrity through methods like menus, filters, and cross checks.	High	Yes	No	Yes	Yes	Partial	Partial	Partial
e. Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML	High	Yes	No	Yes	Yes	Yes	Yes	Yes
f. Shall be able to import requirements from other tools using text - delimited files.	High	Yes	No	Yes	Yes	Yes	Yes	Yes

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
g. Be capable of maintaining links to external documents to facilitate requirements maintenance	Medium	Yes	Yes	Yes	?	Yes	Yes	No
h. Shall provide a means to unambiguously identify every requirement	High	Yes	Yes	Yes	Yes	Yes	Yes	Yes
i) The user shall be able to define the identification scheme	Medium	?	No	?	Yes	?	?	Yes
ii) The user shall be able to redefine the identification labels of existing requirements	Low	?	No	?	?	?	?	Yes
i. Shall be able to identify hierarchy of requirements	High	Yes	?	Yes	Yes	?	?	Yes
i) Be capable of listing all the lower level (child) requirements from a given requirement.	High	Yes	?	Yes	Yes	Yes	Yes	Yes
ii) Graphical display for assigning and displaying hierarchy	Low	Yes	?	Yes	Yes	Yes	Yes	Yes
2. Requirement Analysis		--	--	--	--	--	--	--
a. Shall be able to define custom categories/attributes to categorize and prioritize requirements	High	Yes	?	Yes	Yes	Yes	Yes	Yes
i) Have custom attributes in pull down menus	Medium	Yes	No	Yes	?	?	?	?
ii) Shall be able to add a category or priority even after data is entered.	High	Yes	?	Yes	Yes	?	?	Yes
b. Shall be able to perform ad hoc queries on requirements	High	Yes	?	Yes	Yes	Yes	Yes	Yes
3. Requirements Traceability		--	--	--	--	--	--	--
a. Shall be able to identify a requirement source	High	Yes	Yes	Yes	Yes	Yes	Yes	Yes
i) Provide reference and links to source documents	Medium	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii) Provide reference and links to use cases	Low	Yes	Yes	Yes	?	Yes+	Yes+	?
b. Be able to trace requirements to Contractor's requirements, design, and test documents	Medium	Yes	No	Yes	Yes	Yes	Yes	Yes
c. Accept trace data from Contractor's requirements management tool.	Medium	Yes	No	?	Yes	Yes	Yes	?
d. Shall trace to results in verification test reports.	High	Yes	?	Yes	Yes	Yes	Yes	Yes

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
e. Record actual verification results, if available	Medium	Yes	No	Yes	Yes	Yes	Yes	Yes
f. Shall identify untraced requirements	High	Yes	?	Yes	Yes	Yes	Yes	Yes
4. Requirements Configuration Management	--	--	--	--	--	--	--	--
a. Shall be able to baseline/rebaseline requirements	High	Yes	No	Yes	Yes	Yes	Yes	Yes
b. Shall be able to add and update requirements	High	Yes	Yes	Yes	Yes	Yes	Yes	?
i) Shall be able to input pending requirements along with comments	High	Yes	No	Yes	Yes	No	Yes	?
ii) Shall track status of all pending requirements	High	Yes	No	Yes	Yes	No	Yes	?
iii) Shall output reports for the approval process	High	Yes	No	Yes	Yes	No	Yes	?
iv) Shall be able to record resolution of proposed requirement	High	Yes	No	Yes	Yes	No	Yes	?
v) When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.	High	Yes	No	Yes	Yes	Yes	Yes	?
vi) Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.	Low	Yes	No	Yes	?	No	?	?
vii) Provide requirement version identification, such as by revision letter, date and time, combination of these, etc	Medium	Yes	No	Yes	Yes	Yes	?	?
viii) Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups	Medium	Yes	No	Yes	?	Yes	Yes	?
ix) When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements	Medium	Partial	No	No	Yes	Yes(through MS Word)	Yes(through MS Word)	?
c. Shall be able to track requirements status	High	Yes	?	Yes	Yes	Yes	Yes	Yes
i) Shall provide entire requirement history (who, what, where, when, how)	High	Yes	No	Yes	Yes	Yes	Yes	Yes
5. Communication	--	--	--	--	--	--	--	--

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
a. Automatic email linking for discussion about requirements or changes	Low	Yes+	No	Yes	No	No	Yes	No
6. Requirements Outputs	--	--	--	--	--	--	--	Uses Crystal Reports
a. Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.	High	Yes	No	Partial	Yes	Yes	Yes	Partial
i) Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.	Medium	Yes	No	Yes	Yes	Yes	Yes	Yes
ii) Synchronize database content with document	Medium	?	No	Yes	Yes	Yes	Yes	Yes
b. Shall provide periodic status reports	High	Yes	No	Yes	Yes	Yes	Yes	Yes
i) Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.	High	Yes	No	Yes	Yes	Yes	Yes	No
ii) Shall produce status report for configuration management	High	Yes	No	Yes	Yes	Yes	Yes	No
c. Support ad hoc reports	High	Yes	No	Yes	Yes	Yes	Yes	Yes (using working sets)
d. May output reports or report data to MS Word, Excel, or ODBC-compatible databases	Medium	Yes	No	Yes	Yes	Yes	Yes	Partial
e. May have WYSIWYG preview of finished outputs	Medium	Yes	No	Yes	Yes	Yes	Yes	Yes
7. Requirements Re-use	--	--	--	--	--	--	--	--
a. Store common requirements in central location and export to other projects	Medium	Yes	No	Yes	?	Yes	Yes	No
b. Support multiple project requirements	Medium	Yes	No	Yes	?	Yes	Yes	No
8. Shall be compatible with other tools.	High	--	--	--	--	--	--	?
a. Support OLE copy and paste functions	High	Yes	Yes	Yes	Yes	Yes	Yes	?

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
b. Database must be ODBC compliant	High	?	No	No	Yes	Yes	Yes	?
9. Administration	--	--	--	--	--	--	--	--
a. The tool shall have controlled access.	High	Yes	?	Yes	Yes	Yes	Yes	Yes
b. There shall be user privileges based on type of user	High	Yes	?	Yes	Yes	Yes	Yes	Yes
i) Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.	High	Yes	?	Yes	Yes	Yes	Yes	Yes
10. User Interface	--	--	--	--	--	--	--	--
a. Shall have an intuitive user interface	High	Yes	Yes	?	Yes	?	Yes	?
b. Customize user interface for data entry of different types of data.	Low	?	No	?	?	?	?	?
11. Environment	--	--	--	--	--	--	--	--
a. Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT	High	Yes	Yes	Yes	Yes	Yes	Yes	Yes
b. The tool should be scalable for a variety of project sizes	High	No	No	Yes	Yes	Yes	Yes	Yes
i) The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users	High	Not support single user	No	Yes	Yes	Yes	Yes	Yes
ii) With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.	High	Yes	No	Yes	Yes	Yes	Yes	?
c. Installation should be simple	High	?	Yes	?	?	?	?	?

Requirement Description	Priority	Caliber RM	Requirement	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
d. Architecture		Three tier, client, server, and intranet	MS Word Add-in	Stand alone or client server	Install on PC and share through network	Requires MS office	Requires MS office	Can be standalone or Client/Server. Client is Win or NT, Server is Win, NT or Solaris
e. Database		Versant Object Repository	None	Proprietary Object Oriented Database	MS Access or Oracle	Microsoft Access, Microsoft SQL Server, or Oracle	Microsoft Access, Microsoft SQL Server, or Oracle	Proprietary database
12. Other	--	--	--	--	--	--	--	--
a. Shall support open database system (standard query access)	High	Partial	No	No	Yes	Yes	Yes	No(queries must be through X-ties menus)
b. Scripting capability	Low	Yes	No	Yes	Yes	Partial	Partial	?
c. A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer	Low	Yes	No	Yes	No	?	Yes	No
13. Vendor support	--	--	--	--	--	--	--	--
a. The vendor should have training available.	High	Yes	Yes	Yes	Yes	Yes	Yes	No formal training required

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
b. What is the recommended training time?		3-day cours	On-line Tutorial	2 day course	1 day	Tool can be learned with tutorial; recommended 3 day req mgt course	Tool can be learned with tutorial; recommended 3 day req mgt course	1 day w on-line tutorial
c. The user documentation should be easy to follow	High	?	?	?	?	Yes	Yes	?
d. Should have on-line, context sensitive help	Medium	Yes	Yes	Yes	Yes	Yes	Yes	Yes
e. The vendor should provide good technical support	High	Yes	Yes	Yes	Partial	Yes	Yes	?
d. Cost.		--	--	--	--	--	--	--
a. What is the initial cost?		\$24, 995 for 10 clients minimum	\$199 single PC	\$5,000 floating	\$3,250 per copy	\$1299 Node locked, \$2,999 floating	\$3295 node locked, \$6590 floating plus MS Office	\$1299 for NT server, \$450 client plus Crystal Reports
b. What is the network license policy?		Float or seat	N/A	Float or seat with FlexLM	Site or float	Float or seat with FlexLM	Float or seat with FlexLM	?
c. What is the warranty?		30 day	N/A	90 day		Y2K	Y2K	?
d. What is the maintenance and upgrade policy?		\$995 per client per year	N/A		\$730 per copy	\$264 node lock, \$600 floating	\$828 node locked, \$1656 floating	?

Requirement Description	Priority	Caliber RM	Requireit	DOORS 4.0	RDT 3.0	Requisite Pro	Analyst Studio	X-ties
e. What is initial cost for 3 seats?		\$24, 995	\$597	\$15,000 (Special introduction of \$29,500 for three float licenses and 10 intranet users, plus 3day course for 5 users)	\$9,750	\$7,297 (one node, two float)	\$16,475 (one node, two float)	\$2,649
e. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?		Yes	Yes	Yes	Partial	Yes	Yes	Partial
Summary		Fail	Fail	Fail	Pass,	Pass	Pass	Fail

Requirements Management Tool Requirements Caliber-RM

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Overview

TBI's Caliber-RM™ is a collaborative, Internet-based requirements management system that facilitates more effective requirement definition and management throughout the development cycle. Providing a centralized requirement repository and automatic change notification, Caliber-RM enables better collaboration and communication among project teams, assisting them in identifying and eliminating requirement errors earlier in the application lifecycle.

TBI markets and sells Caliber-RM®, a collaborative, Internet-based requirements management system that enables project teams to deliver higher quality applications; and Caliber-RBT™, a requirements-based, functional test case design tool. Caliber-RM is integrated with TestDirector™, a test planning and management tool from Mercury Interactive™; SELECT Enterprise®, an object-modeling tool from Princeton Softech; ESTIMATE Professional™, a project planning and estimation tool from Software Productivity Center; and PVCS Dimensions and PVCS Version Manager, MERANT's software configuration management solutions.

Requirements

1. Requirement Definition

- a. Shall be able to specify database fields to be included in requirements definitions*

Project teams can define and document requirement data-including user-defined attributes, priority, status, acceptance criteria and traceability. Caliber-RM's support for multiple requirement types, user-defined attributes (UDAs) and easy-to-use customization features make it flexible enough to support a variety of processes and applications. Caliber-RM supports an unlimited number user-defined requirement types and user-defined attributes.

- b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*

- c. *Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

Caliber-RM supports unlimited user-defined attributes allowing for many data types (i.e. text box, selection list, real, date, boolean, etc.) which allows for the capture of this type information. Users also can link document references to requirements to provide additional supporting information.

- d. *Shall support manual entry of requirements*
 - i) *Be capable of storing and editing the full text of requirement statements with basic word processor functions.*

Requirements can be manually entered directly into the Caliber-RM repository. Caliber-RM uses an OLE link to Microsoft Word for functions like spell checking. In addition, Caliber-RM's Glossary feature allows users to define commonly used terms as well as incorrect or vague terms so that other team members can access the definition to promote correct usage of terms.

- ii) *Spell checking*

- iii) *Shall ensure data integrity through methods like menus, filters, and cross checks.*

Caliber-RM recognizes terms used in multiple requirements, and allows users to link those terms to a standard definition, promoting their correct usage throughout the project. Caliber-RM includes a Glossary, which allows users to define commonly used terms to promote correct usage and ensure that everyone understands them, as well as to flag vague or ambiguous terms that more junior requirements writers may use.

- e. *Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*

To enable teams to leverage existing documentation and incorporate requirements from external sources, Caliber-RM provides an automatic import capability. Caliber-RM's import wizard allows users to specify type styles, keywords and delimiters, then parses the specified document and imports all requirements matching the criteria. Users can rearrange, modify or delete imported requirements before placing them in Caliber-RM to be managed.

Users can import requirements from Microsoft Word, and can choose type styles, delimiters and/or key words to use when parsing the document. Caliber-RM imports requirements based upon the criteria specified, then allows users to modify, move or delete them before placing the imported requirements in the requirement list.

Users can have Caliber-RM automatically identify requirements via the Import from Word Wizard, or they may open a Word document in Caliber-RM and manually identify requirements. If users open a Word document, they can highlight the requirement text and add a requirement in Caliber-RM in the

appropriate location. The requirement is then maintained in Caliber-RM's repository.

- f. Shall be able to import requirements from other tools using text-delimited files.*

In addition, Caliber-RM allows users to import requirements from a text-delimited file. They then can choose how individual fields in the file match to attributes in Caliber-RM. In addition, Caliber-RM's Word Import facility allows users to import requirements from a Word file

- g. Be capable of maintaining links to external documents to facilitate requirements maintenance*

Caliber-RM supports links with outside documents through document references. When a file is linked as a reference, Caliber-RM maintains that link indefinitely. If the name of the file changes outside of Caliber-RM, the link remains to the original document. If the document is updated but the name remains the same, the link is still intact.

- h. Shall provide a means to unambiguously identify every requirement*

Caliber-RM generates a unique ID number for each requirement as it is created, allowing users to identify requirements by their ID. When a requirement is deleted, the ID number is not reused.

- i) The user shall be able to define the identification scheme*
- ii) The user shall be able to redefine the identification labels of existing requirements*
- i. Shall be able to identify hierarchy of requirements*
 - i) Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) Graphical display for assigning and displaying hierarchy*

Yes

2. Requirement Analysis

- a. Shall be able to define custom categories/attributes to categorize and prioritize requirements*

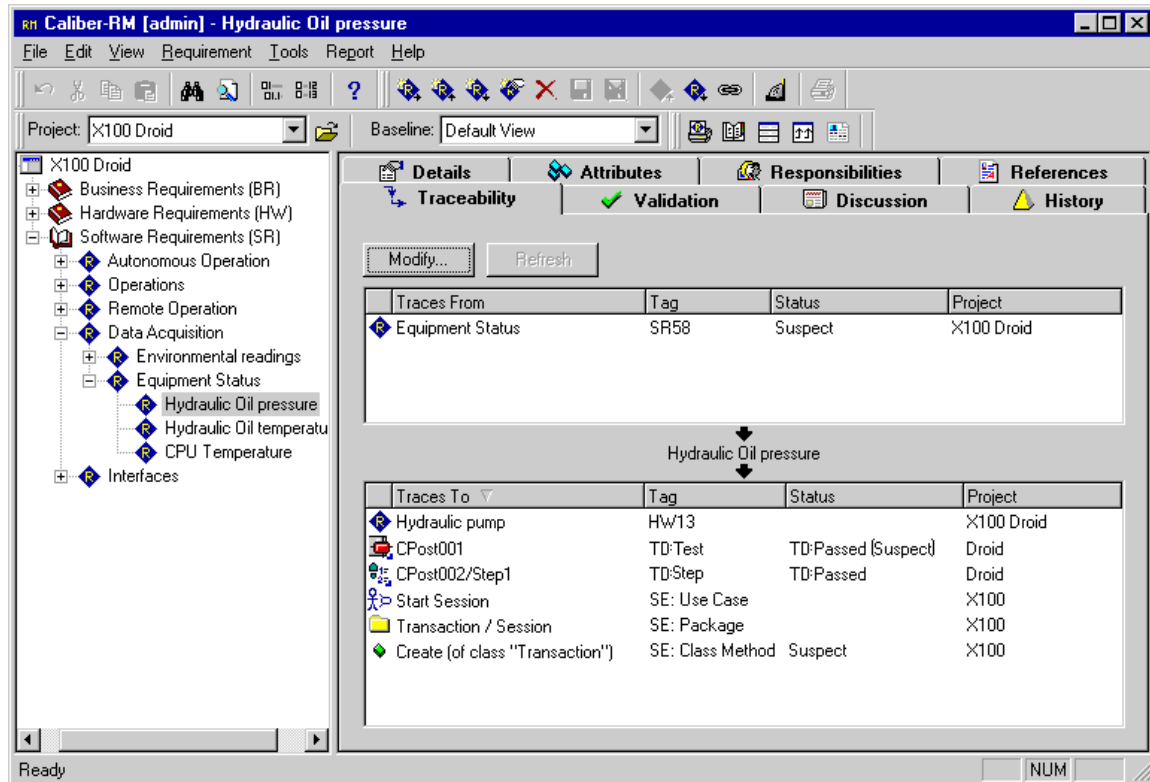
Caliber-RM supports an unlimited number user-defined requirement types and user-defined attributes.

- i) Have custom attributes in pull down menus*
- ii) Shall be able to add a category or priority even after data is entered.*

- b. Shall be able to perform ad hoc queries on requirements*

3. Requirements Traceability

Caliber-RM allows users to trace requirements to other requirements, development entities such as use cases and business processes, and test entities such as tests and test sets. When a requirement is modified, Caliber-RM marks all associated links as suspect.



a. *Shall be able to identify a requirement source*

i) *Provide reference and links to source documents*

Often, requirements need supporting information-such as screen prototypes, flow diagrams and spreadsheets-to help the project team understand them completely. To make this information accessible to team members, Caliber-RM allows multiple external document references to be created for each requirement. These references can be any type of file, including graphics, spreadsheets, Word® documents and HTML. In addition, users can create URL and text references. Once references are created, users can double-click and open the file. Caliber-RM is closely integrated with Microsoft Word and Excel®, and allows users to link to text or cells within documents to specify exactly what information relates to the requirement.

ii) *Provide reference and links to use cases*

Through Caliber-RM's object modeling integration, users can trace requirements to business processes, use cases, classes, methods and packages.

b. *Be able to trace requirements to Contractor's requirements, design, and test documents*

The traceability tab as well as the traceability matrix allows one to "follow the links" to traverse any of the requirement interdependencies. Through the traceability matrix, the user can see any inconsistencies in traceability linkages, as well as be made aware of suspect links in a concise, customizable, graphical view. The traceability matrix also allows users to examine the

relationships between requirements and their related development and testing information. For example, a user can easily see which requirements are still to be tested, and which are currently in design.

c. Accept trace data from Contractor's requirements management tool.

d. Shall trace to results in verification test reports.

User-defined attributes allow for this type of information to be recorded and stored. Caliber-RM also contains a Validation tab that can be used to store verification information and acceptance criteria for each requirement. With the test planning and management integration, Caliber-RM allows users to trace requirements directly to tests, enabling them to store the user acceptance criteria in a comprehensive test management tool and display that information in Caliber-RM.

e. Record actual verification results, if available

This is supported through the use of customizable requirement types and user-defined attributes. Integrations with third-party tools also provide the ability to link requirements with related development and testing information. Roll up of actual results is supported via an export to an Access database, Excel spreadsheet, or other similar application.

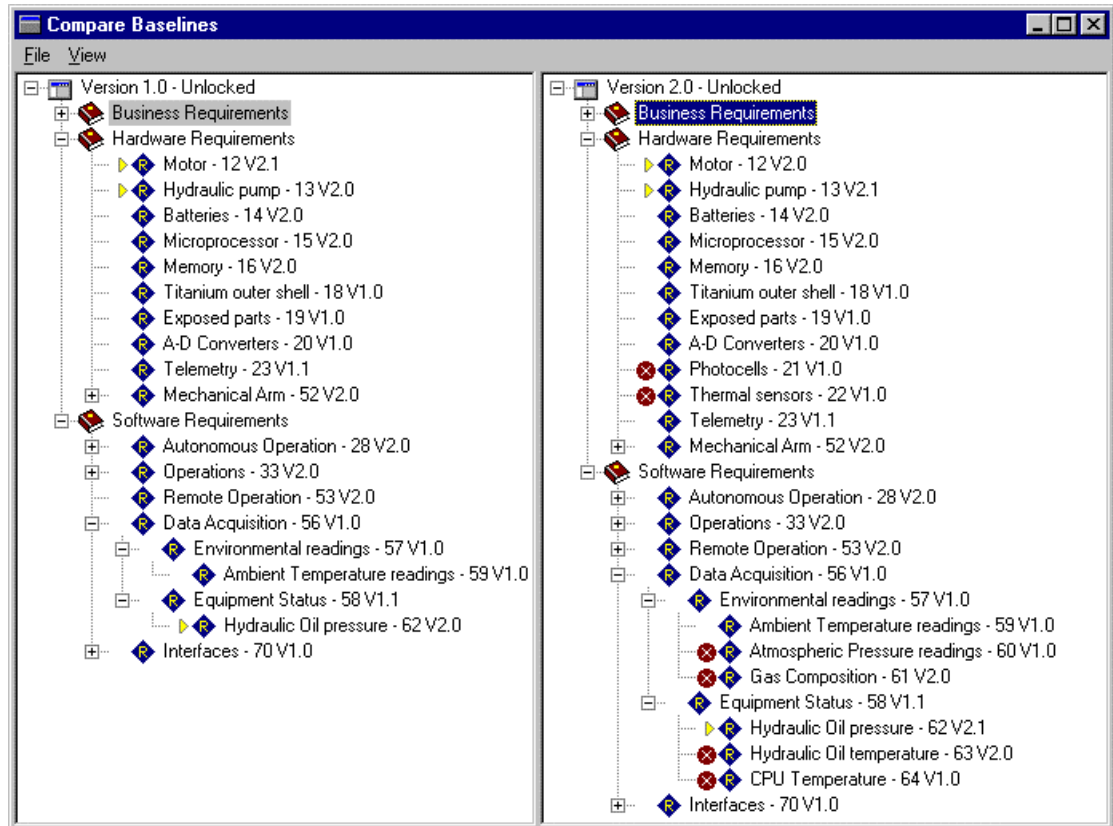
f. Shall identify untraced requirements

Through the Traceability Matrix, users can easily identify any requirements not linked to development or testing entities, to ensure that all requirements are correctly developed and thoroughly tested. Users also can select the "No Traces" button, which highlights requirements which do not link to other requirements in the current matrix. This allows users to easily identify orphans.

4. Requirements Configuration Management

a. Shall be able to baseline/rebaseline requirements

Project teams can use baselines to label a subset of requirements at specific versions, or to capture a "snapshot" of the project at a point in time. Users then can view a previous baseline to see what changes have been made to the project. Users even can compare baselines, allowing them to easily identify major changes and scope creep that could affect deadlines and budgets.



- b. *Shall be able to add and update requirements*
 - i) *Shall be able to input pending requirements along with comments*
 - ii) *Shall track status of all pending requirements*
 - iii) *Shall output reports for the approval process*
 - iv) *Shall be able to record resolution of proposed requirement*
 - v) *When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.*

When a requirement changes, Caliber-RM marks all links as suspect to allow users to see how the change will affect other objects.

- vi) *Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*

Caliber-RM includes the ability to submit changes into an approval cycle (for acceptance/voting) before committing the changes to the tool for everyone to see.

- vii) *Provide requirement version identification, such as by revision letter, date and time, combination of these, etc*

When a requirement is modified, Caliber-RM automatically increments the version number. Users can view any requirement version simply by selecting the version in a drop-down list. Users also can compare versions to better understand how the requirement has evolved.

- viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*
- ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*

Caliber-RM's change history tracks all changes made to each requirement. Users can compare two different versions of a single requirement, and Caliber-RM highlights the differences automatically. In addition, Caliber-RM allows users to compare two different requirements. For comparisons of groups of requirements, Caliber-RM also includes a baseline comparison feature

- c. *Shall be able to track requirements status*
 - i) *Shall provide entire requirement history (who, what, where, when, how)*
Caliber-RM maintains a full change history for each project and requirement, including the changes that were made, when and why they were made, and who made them. Caliber-RM captures the date, time, user, before and after values, and a comment as to the reason for the change, as well as whether the change is considered a major or a minor requirement revision.

5. *Communication*

- a. *Automatic email linking for discussion about requirements or changes*
Providing a centralized requirement repository and automatic change notification, Caliber-RM enables better collaboration and communication among project teams, assisting them in identifying and eliminating requirement errors earlier in the application lifecycle.

6. *Requirements Outputs*

- a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

To support project teams that must produce hard copy reports, Caliber-RM provides both customizable and standard reporting capabilities. The Caliber Document Factory™ allows users to create any type of customized specifications document using Word templates. These templates can use filter and sort criteria to print a specific subset of requirements, or the templates may include all requirements. Caliber-RM's standard reports, requirement grid and traceability matrix offer additional reporting options.

- i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*
This capability is provided via the highly extensible Caliber Document Factory.
 - ii) *Synchronize database content with document*
- b. *Shall provide periodic status reports*

Caliber-RM's system Status attribute, featuring customizable values, tracks the status of each requirement. A standard Status report is available within Caliber-RM to include: Technical Performance Measurement status accounting and Requirement progress/status reporting

- i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*
- ii) *Shall produce status report for configuration management*

c. Support ad hoc reports

The Caliber-RM requirement grid allows for flexible querying and searching of requirement data, and these queries may be saved and reused. In addition, the Caliber Document Factory allows users to filter and sort data for printing in a customized report. Data in the requirement grid may also be updated, allowing for bulk updates.

d. May output reports or report data to MS Word, Excel, or ODBC-compatible databases

Standard reports, traceability matrices, and customizable requirement grids may be viewed and printed. Charting and graphing is done via export of the Caliber-RM repository to popular PC formats.

e. May have WYSIWYG preview of finished outputs

All documents are viewable in WYSIWYG format before printing.

7. *Requirements Re-use*

a. Store common requirements in central location and export to other projects

And Caliber-RM's support for reusable requirements ensures that project teams can build from previous experience and applications, enabling more rapid development and better use of resources. Caliber-RM allows project teams to share requirements, both within and across projects. Shared requirements are listed within the requirement tree, and their descriptions are available as read-only. When shared requirements must be modified, the project team need only update them in one location, and the new data is displayed in all linked instances.

b. Support multiple project requirements

8. *Shall be compatible with other tools.*

a. Support OLE copy and paste functions

Caliber-RM uses an OLE link to Microsoft Word

b. Database must be ODBC compliant

9. *Administration*

a. The tool shall have controlled access.

Caliber-RM supports very granular security profiles that are assigned to groups/users in each project. Security profiles determine which requirement types users can add, modify or delete, as well as the level of access to individual attributes for each requirement.

- ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*

Caliber-RM is engineered from the ground up for enterprise-wide, secure access to the requirement repository. When a requirement is being modified, it is locked and cannot be modified by another user until it is saved. By locking at the requirement level, Caliber-RM allows multiple users to work on the same project at the same time.

- c. *Installation should be simple*

- d. *Architecture*

Server - Microsoft Windows NT Server or Workstation v4.0 or higher

Client - Microsoft Windows 95/98, NT 4.0

Web Access - Any Java-enabled Web browser

- e. *Database*

Versant Object Repository

12. *Other*

- a. *Shall support open database system (standard query access)*

Export to many popular PC formats is supported.

- b. *Scripting capability*

Scripts may be written to automate tasks such as report generation, data export, etc.

- c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*

Caliber-RM is designed to work efficiently over TCP/IP connections and modems. Transmitting only the information each user needs for faster communication, Caliber-RM can bring distributed project teams closer together. Caliber-RM also offers a Web Access Component that allows team members to view and comment on requirements through a Java-enabled browser such as Netscape® or Microsoft® Internet Explorer®. This component provides remote access for individuals only needing review and minor update or comment capabilities.

13. *Vendor support*

- a. *The vendor should have training available.*

Yes

- b. *What is the recommended training time?*

A three-day user course is available. Customized training is also available.

- c. *The user documentation should be easy to follow*

A printed manual plus online help system is included with the tool. In addition, the manual is provided in PDF format on the program disk.

d. Should have on-line, context sensitive help

A printed manual plus online help system is included with the tool.

e. The vendor should provide good technical support

Help desk is available from 8:00 to 6:00 PM, EST, at 770-937-7870. In addition, questions can be emailed to support@tbi.com or faxed to 770-937-7901 at any time.

d. Cost.

a. What is the initial cost?

The minimum purchase is \$24, 995 for 10 clients.

b. What is the network license policy?

Seat or concurrent licensing is available.

c. What is the warranty?

A complete 30 day, money back guarantee is standard policy.

d. What is the maintenance and upgrade policy?

Major releases are planned approximately twice per year, minor upgrades will be provided on an as needed basis. TBI offers a support program providing unlimited technical support plus any major release upgrades for a nominal annual fee.

e. What is initial cost for 3 seats?

e. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?

Technology Builders, Inc. is a privately held software products and services company providing integrated solutions for enterprise and e-business application development. Through the company's suite of TBI-Caliber software products and strategic vendor partnerships, the company provides best-of-class software quality management solutions, including requirements management, requirements-based testing, test case design, object modeling, configuration management, project management, test planning and management, and defect tracking.

TBI has 120 employees in nine major cities in North America and currently markets internationally through distributors. TBI's sales distribution model currently includes a direct sales force and indirect channels. The company's sales volume has increased rapidly, resulting in a #15 ranking on the Deloitte & Touche Technology Fast 500. The company's 18,438 percent revenue increase over the past five years can be attributed to a unique growth strategy and an explosive requirements management market.

Product Line.

TBI markets and sells Caliber-RM®, a collaborative, Internet-based requirements management system that enables project teams to deliver higher quality applications;

and Caliber-RBT™, a requirements-based, functional test case design tool. Caliber-RM is integrated with TestDirector™, a test planning and management tool from Mercury Interactive™; SELECT Enterprise®, an object-modeling tool from Princeton Softech; ESTIMATE Professional™, a project planning and estimation tool from Software Productivity Center; and PVCS Dimensions and PVCS Version Manager, MERANT's software configuration management solutions.

Customers

TBI maintains a client base of over 500 companies, many representing the Fortune 1000, including IBM, EDS, Bank of America, Hewlett Packard, Warner Lambert, SUPERVALU, Universal Music, Sprint, Delta, BellSouth, Chase Manhattan Bank and Donaldson, Lufkin and Jenrette.

Additional Features

And using Caliber-RM's Test Wizard, team members can generate tests automatically, even including the verification information stored with each requirement in the test description.

Group discussion Allows project teams to provide input on requirements, including reasons, changes and opinions to further define and prioritize requirements

Caliber RM has Wizards to guide users through complex tasks.

Caliber-RM provides a glossary for users to enter and define terms specific to their applications and environment. These terms then can be used to promote correct usage by all users, throughout and across projects. When entering a requirement description, if a user enters a term already defined in the glossary, Caliber-RM will automatically turn the term into a link. Users then can right-click on linked terms to open the glossary and see the definition.

Summary

Great requirements management and traceability. Provides good audit trail. Support document generation to MS Word. Support change management process.

Disadvantage is that it has Versant database and does not support SQL. It is also more expensive. It would be solution for whole division if set up on a central server.

Requirements Management Tool Requirements

Doors 4.0 (Requirement)

Company: QSS

North & South America

Quality Systems & Software

200 Valley Road

Suite 306

Mt Arlington

NJ 07856

USA

Tel: +1 973 770 6400

Toll free: +1 877 ASK 4 QSS

Fax: +1 973 770 6401 Information from other tools may be displayed graphically depending upon the nature of that data, e.g. a design may be displayed as a hierarchical decomposition and project data from Microsoft Project is displayed graphically to enable links to WBS data.

E-mail: info@qssinc.com

Northern California

1999 South Bascom Avenue

Suite 700

Campbell

CA 95008

USA

Tel: +1 408 879 2344

Fax: +1 408 879 2347

Contact: [Mark Surles](#), District Manager

1. Requirement Definition

- a. Shall be able to specify database fields to be included in requirements definitions*

DOORS configurable/programmable attributes allow status monitoring of any held information, either within a document module or across links in multiple documents (modules).

- b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*

Information from other tools may be displayed graphically depending upon the nature of that data, e.g. a design may be displayed as a hierarchical decomposition and project data from Microsoft Project is displayed graphically to enable links to WBS data.

- c. Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

All rationale, test/validation, critical issues may be associated with the requirements using assigned attributes or other associated objects in the database.

Importantly, this information may also be associated with the link directly as well as the object/requirements itself. If required, DOORS can be set to prompt the user for rationale, etc, upon creation or change of any requirement or data object.

d. Shall support manual entry of requirements

Derived or additional requirements may be created directly using DOORS' full requirements editor or using decomposition tools to automatically allocate, sub-divide or combine requirements or other data. Links are created by the tool when this is done. Fully manual markup using mouse highlighting is available if needed.

i) Be capable of storing and editing the full text of requirement statements with basic word processor functions.

ii) Spell checking

DOORS includes a spell checker on both the UNIX and PC versions.

iii) Shall ensure data integrity through methods like menus, filters, and cross checks.

TBD

e. Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML

Automatic input parsers analyze text for keywords and create attributes for recognized data such as references and security classification. Following parsing requirements can be automatically labeled based on any search criteria.

f. Shall be able to import requirements from other tools using text-delimited files.

DOORS can import information in many forms such as MS-Word, ASCII, Spreadsheet, FrameMaker, Interleaf and RTF, so that structures, attributes and links may be set up automatically without manual input.

g. Be capable of maintaining links to external documents to facilitate requirements maintenance

No. Requirements that are updated, either directly or in batch operations, retain their links. New versions of documents may be used to update the requirements, however, the use of constant requirements identifiers in the source documents significantly aids the process. It should be noted however, that DOORS provides a fully featured editing environment to negate the need for external modification and in many instances remove the need for this feature. Where needed, links can also be loaded in batch mode from external files.

h. Shall provide a means to unambiguously identify every requirement

i) The user shall be able to define the identification scheme

ii) The user shall be able to redefine the identification labels of existing requirements

- i. *Shall be able to identify hierarchy of requirements*
 - i) *Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) *Graphical display for assigning and displaying hierarchy*
- 2. *Requirement Analysis*
 - a. *Shall be able to define custom categories/attributes to categorize and prioritize requirements*
DOORS configurable/programmable attributes allow status monitoring of any held information, either within a document module or across links in multiple documents (modules).
 - i) *Have custom attributes in pull down menus*
 - ii) *Shall be able to add a category or priority even after data is entered.*
 - b. *Shall be able to perform ad hoc queries on requirements*
- 3. *Requirements Traceability*
 - a. *Shall be able to identify a requirement source*
 - i) *Provide reference and links to source documents*
Link analyses (up, down or sideways) may be performed from any starting point throughout the entire chain of links. This may be performed on line or printed in the form of a matrix style report. DOORS also offers the users visible "link-tips" to show links directly in the document and traverse them with the simple click of the mouse. Links are also visible in exported HTML versions of the documents and in data viewed directly via the Internet/Intranet using DOORSNet.
 - ii) *Provide reference and links to use cases*
Not specified.
 - b. *Be able to trace requirements to Contractor's requirements, design, and test documents*
 - c. *Accept trace data from Contractor's requirements management tool.*
 - d. *Shall trace to results in verification test reports.*
This is achieved by the use of links and/or attributes.
 - e. *Record actual verification results, if available*
Pre-written scripts provided in the DOORS library support roll up values either within a set of requirements or across data linked from many modules. Analysis may also be automated to highlight requirements or other objects where actuals exceed allocated values. If necessary, such discrepancies may be automatically e-mailed to key users. DOORS also offers a statistics tool to automatically generate graphical displays of metrics or calculated values.
 - f. *Shall identify untraced requirements*
DOORS can identify objects/requirements with no links at all, with no outward links or with no incoming links. This can also be conditional on other data types. For example, show all unlinked tests that have not yet been performed.

4. *Requirements Configuration Management*

DOORS automatically records who, what (down to the actual attribute changed), when and how automatically. The why can also be captured either through the voluntary entry of data by the user, or forced via DOORS' automated trigger mechanism such that the user would not be able to save the change without entering a rationale. DOORS also supports a full change Proposal Mechanism for collecting change requests and formally reviewing them via a CCB before changes get into the documents or data sets.

a. Shall be able to baseline/rebaseline requirements

Full baselining is supported as well as the comparison of adjacent baselines. Baselines in DOORS are saved, locked versions of data sets such as requirements, system elements, tests, etc. that may be viewed, flexibly reported, but never changed.

b. Shall be able to add and update requirements

i) Shall be able to input pending requirements along with comments

ii) Shall track status of all pending requirements

iii) Shall output reports for the approval process

DOORS provides a formal Change Process for submission of proposed changes. In the latter case, specified users then review proposed changes either on-line (with sign off fields) or by committee (CCB). Accepted changes are promoted into the document or dataset (module) automatically. This also supports the submission of changes for review from remote locations.

iv) Shall be able to record resolution of proposed requirement

v) When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.

vi) Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.

The CPS (Change Proposal System) also allows proposed changes from multiple users to be reviewed together and either the best taken or a combination generated. This feature is available through the Web interface, DOORSNet.

vii) Provide requirement version identification, such as by revision letter, date and time, combination of these, etc

viii) Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups

ix) When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements

Partial. The spreadsheet import does automatic updates of new versions. Other parsers may be user modified to compare existing with new data.

- c. *Shall be able to track requirements status*
 - i) *Shall provide entire requirement history (who, what, where, when, how)*
 - 5. *Communication*
 - a. *Automatic email linking for discussion about requirements or changes*
 - 6. *Requirements Outputs*
 - a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

DOORS provides templates for documents that comply with standards and result in printed documents that adhere to the standard in question. These include 2167A, 490A and 498. Users may add further templates if needed.

DOORS conforms with many standards and QSS plays a part in defining standards such as IEEE and the European standard, PSS-05. DOORS also offers standards to the user in terms of document templates such as DOD 2167A.

- i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*

Other mechanisms such as acronym tables may be implemented by the user with DOORS modules making use of the Object Oriented database.

Title pages, contents pages, headers, footers, graphics, etc. are all part of the DOORS output to Postscript printers on UNIX or the Windows Print Manager on PC.

- ii) *Synchronize database content with document*

- b. *Shall provide periodic status reports*

- i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*

May be achieved using attributes associated with the requirements or independent data linked to the requirements. Performance metrics and other calculations may then be performed on the data. Metrics and other numerical data can be calculated/allocated/dispersed between requirements or other data at the same level or across different levels through links.

DOORS can generate color graphs and charts for displaying metrics data, results of calculations and statistics. Examples of such charts produced by QSS include a volatility chart showing numbers of changes over time for a document or data set. These charts and graphs can be generated and printed directly from DOORS without the use of an external graphics package.

DOORS document hierarchies may be viewed graphically and traceability may be viewed as "tree" structures in the Traceability Explorer.

- ii) *Shall produce status report for configuration management*

DOORS configurable/programmable attributes allow status monitoring of any held information, either within a document module) or across links in multiple documents (modules).

c. Support ad hoc reports

DOORS supports searches and queries on any data according to users needs either by sets that fulfill criteria or each next object that meets defined criteria.

d. May output reports or report data to MS Word, Excel, or ODBC-compatible databases

e. May have WYSIWYG preview of finished outputs

A Full print preview function exists for DOORS on Windows and UNIX. Also, the usually day-to-day format of the data display on the screen is that of the finished layout when printed. In this way, the user can continuously preview the output appearance and work in the normal working window.

7. *Requirements Re-use*

a. Store common requirements in central location and export to other projects

b. Support multiple project requirements

8. *Shall be compatible with other tools.*

a. Support OLE copy and paste functions

DOORS has the most flexible method of inter-tool communication. Not only is there a full API, but the DOORS extension language (DXL) can be used to write imports and exports to other tools in almost any format. DXL being C-like is very easy to learn and use. DOORS on the PC can also use OLE automation for integration such as those used by Microsoft tools.

b. Database must be ODBC compliant

No.

9. *Administration*

a. The tool shall have controlled access.

Access control in DOORS may be achieved at three levels in DOORS. First, sets of data such as requirements in a document or all test cases may be controlled globally. Second, individual objects such as a single requirement may be controlled. Third, access controls may be imposed on attributes within objects. For example, users may be able to edit a comments attribute but not modify the allocated cost attribute. Access rights are also inherited by children from parent objects. Access levels include the ability to read and the ability to modify.

b. There shall be user privileges based on type of user

- i) Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.*

10. *User Interface*

a. Shall have an intuitive user interface

DOORS supports a graphical representation of the data which may also be used for all editing, data manipulation and querying functions.

- b. *Customize user interface for data entry of different types of data.*
- 11. *Environment*
 - a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
Sun - Solaris, HP-UX, IBM AIX, Digital UNIX; Windows 95, Windows 98, and Windows NT 4.
 - b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users*
Multiple concurrent users on the same or different data and or platforms. This includes multi-user use on the same data from native PC and UNIX versions of DOORS concurrently. DOORS may be run as stand alone, with mapped drives or as a full client server application over TCP/IP.
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*
This is supported in DOORS through multi-user access to each module.
 - c. *Installation should be simple*
 - d. *Architecture*
 - d. *Database*
DOORS uses a Proprietary Object Oriented Database which is now in use by over 10,000 users.
- 12. *Other*
 - a. *Shall support open database system (standard query access)*
Partial. The DOORS extension language allows data to be accessed more easily than SQL using standard high level programming techniques. DXL is easily programmable by those conversant with C such that SQL knowledge is unnecessary. Also see the answer to 8.1.2 above.
 - b. *Scripting capability*
Automation of tasks is supported through a user configurable language. These automated scripts may then be added as menu items and appear just like other functions of the tool. Alternatively scripts may be run from the operating system command line for batch operation.
 - c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*
DOORS offers a web interface option called DOORSNet.
- 13. *Vendor support*
 - a. *The vendor should have training available.*
 - b. *What is the recommended training time?*
The regular DOORS user course is two days.

c. The user documentation should be easy to follow

d. Should have on-line, context sensitive help

User manuals are provided on-line or on CD-ROM. On-line subject look-up help is provided.

e. The vendor should provide good technical support

Telephone support is available for customers under maintenance covering working hours on both the east and west coasts of the USA.

d. Cost.

a. What is the initial cost?

\$5,000 per floating license. Special introduction of \$29,500 for three float licenses and 10 intranet users, plus 3day course for 5 users.

b. What is the network license policy?

FlexLM is used on both UNIX and PCs. PCs use may also be by a hardware key.

c. What is the warranty?

QSS offers a 90 day warranty. For full details please contacts QSS

d. What is the maintenance and upgrade policy?

Updates occur every six to eight months and are free for customers under maintenance.

e. What is initial cost for 3 seats?

\$15,000

f. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?

Quality Systems and Software (QSS) has pioneered a unique approach to managing requirements information and is now recognized as the market-leading provider of Requirements Management solutions* worldwide.

Founded in 1992 by Jim Roberts and Dr. Richard Stevens, QSS is a profitable, privately-held company reporting over 40% annual revenue growth. Recent achievements include making the final of the "1999 New Jersey Ernst & Young Entrepreneur of the Year Awards", winning the "1998 British Computer Society IT Award", and being named "New Jersey Private Company of the Year" in 1997

14. Additional Comments from Vendor:

1. Support of a formal change process with on-line review or CCB support.
2. Access control to the smallest level of granularity, i.e. attributes. Users should be able to view the text of a requirement that is read-only but modify a comment attribute that is read-write.
3. Independence from third part tools so that users with any type of experience can be accommodated.

4. Suitability for management and traceability of non-requirements data. How well does the tool handle software references, test cases, design data, change requests, etc.

Evaluation Summary

Doors strength is that it supports a formal change control process. The biggest disadvantage is that the database is not ODBC compliant. It has a proprietary database. There is not enough information about report generation. The outputs are in postscript? Can these be shared electronically with others? It is designed as a stand alone tool, not integrated with our Office tools.

Requirements Management Tool Requirements

QSS Requireit

Company: QSS

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Quality Systems & Software

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USA

Tel: +1 408 879 2344

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Contact: [Mark Surles](#), District Manager

Overview

QSSrequireit is an affordable tool that enables full-scale requirements management entirely within Microsoft Word - today's most popular word processor. The easy-to-use Word interface extends the benefits of basic RM to team leaders, managers and support staff in areas such as project and product management, marketing, business analysis, quality assurance and systems integration. QSSrequireit is the easiest RM product to use because, in addition to the general familiarity of MS Word, it eliminates the need to manage separate database applications and the minimal learning curve has users up and running immediately. QSSrequireit makes it easy to clearly identify key characteristics of requirements and link related requirements across multiple documents.

Classed as an entry-level, single-user tool, QSSrequireit complements QSS DOORS™, the world's leading enterprise-wide requirements management tool. DOORS is widely used by: commercial and corporate software developers; automotive and aerospace designers; designers of consumer products; military systems engineers; and companies implementing major business systems, including enterprise resource planning and customer relationship management.

Requirements Compliance

1. Requirement Definition

- a. Shall be able to specify database fields to be included in requirements definitions*

Not applicable, there is no database. The application help you identify requirements from MS Word documents. You can link between documents to trace requirements.

- b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*

Can use any object that MS Word supports.

- c. Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

The source document stays in tact so context information stays with the requirement.

- d. Shall support manual entry of requirements*
 - i) Be capable of storing and editing the full text of requirement statements with basic word processor functions.*
 - ii) Spell checking*
 - iii) Shall ensure data integrity through methods like menus, filters, and cross checks.*
- e. Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*

Get better input with easier to use import and export tools for Word, Interleaf and FrameMaker

Basic import and export functions are now separated from advanced import/export functions to make rapid capture of data easier. A new display progress bar has been added to enable users to keep track of status.

- f. Shall be able to import requirements from other tools using text-delimited files.*
 - g. Be capable of maintaining links to external documents to facilitate requirements maintenance*
 - h. Shall provide a means to unambiguously identify every requirement*
 - i) The user shall be able to define the identification scheme*
 - ii) The user shall be able to redefine the identification labels of existing requirements*
 - i. Shall be able to identify hierarchy of requirements*
 - i) Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) Graphical display for assigning and displaying hierarchy*
2. Requirement Analysis
- a. Shall be able to define custom categories/attributes to categorize and prioritize requirements*
 - i) Have custom attributes in pull down menus*
 - ii) Shall be able to add a category or priority even after data is entered.*
 - b. Shall be able to perform ad hoc queries on requirements*
3. Requirements Traceability
- a. Shall be able to identify a requirement source*

- i) *Provide reference and links to source documents*
 - ii) *Provide reference and links to use cases*
 - b. *Be able to trace requirements to Contractor's requirements, design, and test documents*
 - c. *Accept trace data from Contractor's requirements management tool.*
 - d. *Shall trace to results in verification test reports.*
 - e. *Record actual verification results, if available*
 - f. *Shall identify untraced requirements*
- 4. *Requirements Configuration Management*
 - a. *Shall be able to baseline/rebaseline requirements*
 - b. *Shall be able to add and update requirements*

While the DOORS Change Proposal System has been available for some time, it now allows users to easily submit changes against the attributes of requirements, not just requirements text.

 - i) *Shall be able to input pending requirements along with comments*
 - ii) *Shall track status of all pending requirements*
 - iii) *Shall output reports for the approval process*
 - iv) *Shall be able to record resolution of proposed requirement*
 - v) *When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.*
 - vi) *Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*
 - vii) *Provide requirement version identification, such as by revision letter, date and time, combination of these, etc*
 - viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*
 - ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*
 - c. *Shall be able to track requirements status*
 - i) *Shall provide entire requirement history (who, what, where, when, how)*
- 5. *Communication*
 - a. *Automatic email linking for discussion about requirements or changes*
- 6. *Requirements Outputs*
 - a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

Edit Paragraph Style Attribute tool: Paragraphs imported from Word now have visible styles stored in an editable attribute. Change a style and see the new style used on the next export to Word.

 - i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*
 - ii) *Synchronize database content with document*
 - b. *Shall provide periodic status reports*
 - i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*

- ii) *Shall produce status report for configuration management*
 - c. *Support ad hoc reports*
 - d. *May output reports or report data to MS Word, Excel, or ODBC-compatible databases*
 - e. *May have WYSIWYG preview of finished outputs*
- Print Preview: See how your documents will look before you print them.
7. *Requirements Re-use*
 - a. *Store common requirements in central location and export to other projects*
 - b. *Support multiple project requirements*
 8. *Shall be compatible with other tools.*
 - a. *Support OLE copy and paste functions*
 - b. *Database must be ODBC compliant*
 9. *Administration*
 - a. *The tool shall have controlled access.*
 - b. *There shall be user privileges based on type of user*
 - i) *Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.*
 10. *User Interface*
 - a. *Shall have an intuitive user interface*
 - b. *Customize user interface for data entry of different types of data.*
 11. *Environment*
 - a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*

QSSrequireit runs on any IBM-compatible PC installed with Microsoft Word 97 and Word 2000. It requires 8 MB RAM for Microsoft Windows 95 and 16 MB RAM for Microsoft Windows 98 and Windows NT 4.0 or later.

 - b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users*
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*
 - c. *Installation should be simple*
 - d. *Architecture*
 - e. *Database*
 12. *Other*
 - a. *Shall support open database system (standard query access)*
 - b. *Scripting capability*
 - c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*
 13. *Vendor support*
 - a. *The vendor should have training available.*
 - b. *What is the recommended training time?*

- c. *The user documentation should be easy to follow*
- d. *Should have on-line, context sensitive help*
- e. *The vendor should provide good technical support*
- d. *Cost.*

a. *What is the initial cost?*

QSSrequireit Version 1.1 is available immediately. Single user licenses cost \$199 and come with a full year of hotline support and a complimentary copy of "Get It Right The First Time - Writing Better Requirements" by Dr. Richard Stevens, company co-founder.

b. *What is the network license policy?*

c. *What is the warranty?*

d. *What is the maintenance and upgrade policy?*

e. *What is initial cost for 3 seats?*

e. *Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?*

Quality Systems & Software (www.qssinc.com) is the worlds' leading provider of enterprise-wide requirements management solutions for the development of products and services. In addition to the entry-level QSSrequireit, QSS develops, distributes and supports DOORS, the market leading RM tool. Over 40,000 users at more than 700 companies rely on DOORS to help them manage project requirements for: corporate and commercial software development; aerospace and automotive design; and overall design projects in industries such as telecommunications, manufacturing, utilities, medical devices and financial. Founded in 1992, QSS (www.qssinc.com) has corporate headquarters in Mt. Arlington, NJ, and international headquarters in Oxford, England. The company currently employs more than 200 people. QSS is a profitable, privately-held company that has reported over 50% annual revenue growth every year since 1993. In 1998, The Standish Group rated QSS the worldwide leader in the RM tools market with a commanding **38% market share**.

Requirements Management Tool Requirements

Requirements Database Tool RDT V3.0

Company: Igatech
IGATECH Systems Pty Ltd
Level 3, 86 Pirie St
Adelaide SA 5000 Australia
Ph: +61 8 8232 9622 Fx: +61 8 8232 9611
RDT Home Page: <http://www.igatech.com/>

Product Overview

RDT can be used to formulate and generate specifications before the specification is issued as a Contract or Request for Tender. RDT can be used to generate compliancy against a tendered specification during a bid phase. RDT can be used to show the design and traceability of requirements throughout the development cycle of the contract.

RDT's capabilities include :

- Automated requirements capture and syntax parsing directly from existing documents
- Traceability between parent and child requirements capturing associated design decisions
- Requirement verification through test criteria assignments
- Document style editing of data including drag and drop document outline
- Automated document production directly into MS Word, including requirement and test specifications, Requirement Allocation Matrices, parent-child relationships and design documents
- Multiple concurrent window views
- Revision tracking and baseline allocation, including proposals for change
- Workgroup access privileges to control user access down to individual records
- Check-In / Check-Out for sharing data across multiple sites
- Network accessible for multi-user database access - up to 255 concurrent users
- Comprehensive on-line context sensitive help
- Affordable Microsoft® Windows™ based application compatible with MS Office

Requirements

1. Requirement Definition

- a. Shall be able to specify database fields to be included in requirements definitions*

Requirement attributes allow requirements to be tagged and classified during identification.

- b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*

RDT provides full capability to capture architecture, functional decomposition, WBS in graphical format and can display data as a tree view of requirements.

- c. *Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

Available through use of attributes, and use of filters and queries. (May be printed)

- d. *Shall support manual entry of requirements*

- i) *Be capable of storing and editing the full text of requirement statements with basic word processor functions.*

Manual requirements entry is done using edit features within the tool, and/or with cut and paste from external documents.

- ii) *Spell checking*

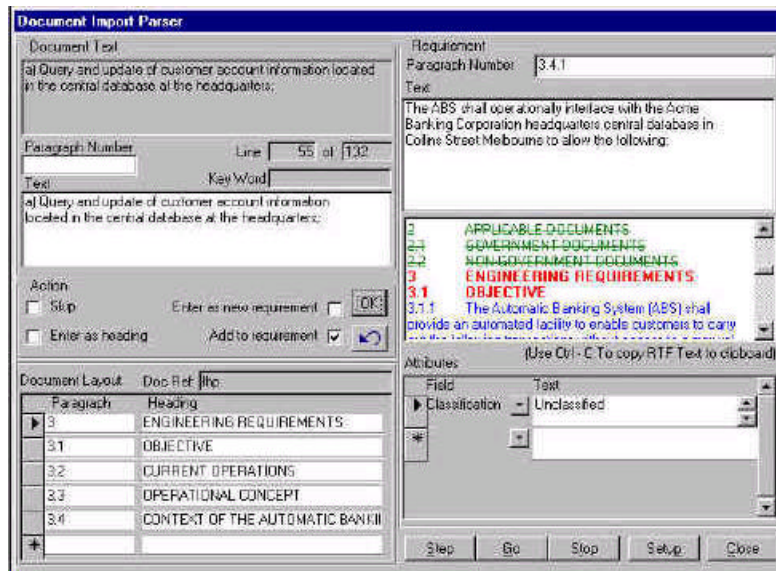
Spell checking is available.

- iii) *Shall ensure data integrity through methods like menus, filters, and cross checks.*

TBD

- e. *Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*

The document import parser strips source documents for requirements, paragraph numbers, headings, notes and requirement attributes, for automatic entry into RDT.



- f. *Shall be able to import requirements from other tools using text-delimited files.*

External data may be entered in ASCII text, Excel, DBase or RTF format.

- g. *Be capable of maintaining links to external documents to facilitate requirements maintenance*

TBD

- h. *Shall provide a means to unambiguously identify every requirement*

- i) *The user shall be able to define the identification scheme*

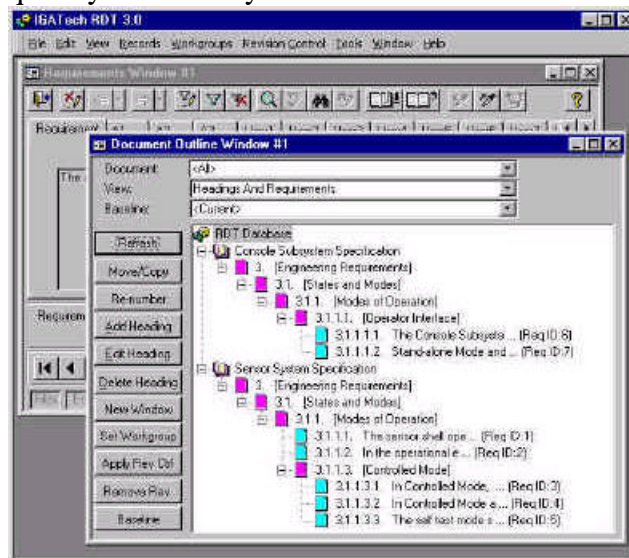
The user can arrange and number the requirements. RDT offers an automatic numbering.

- ii) *The user shall be able to redefine the identification labels of existing requirements*

TBD

- i. *Shall be able to identify hierarchy of requirements*

RDT supports full many to many mapping of requirements through the mandatory entry of related derivation data. The document outline assistant helps you to quickly transform your data into documents



- ii) *Be capable of listing all the lower level (child) requirements from a given requirement.*

Requirement hierarchy can be displayed in visually or in text.

- ii) *Graphical display for assigning and displaying hierarchy*

RDT provides full capability to capture architecture, functional decomposition, WBS in graphical format and can display data as a tree view of requirements.

2. Requirement Analysis

- a. *Shall be able to define custom categories/attributes to categorize and prioritize requirements*

The user can customize the attributes. RDT provides all the functionality for deriving, allocating and assigning requirements and acceptance test procedures.

- i) *Have custom attributes in pull down menus*
- ii) *Shall be able to add a category or priority even after data is entered.*

b. *Shall be able to perform ad hoc queries on requirements*

Available through use of attributes, and use of filters and queries. (May be printed)

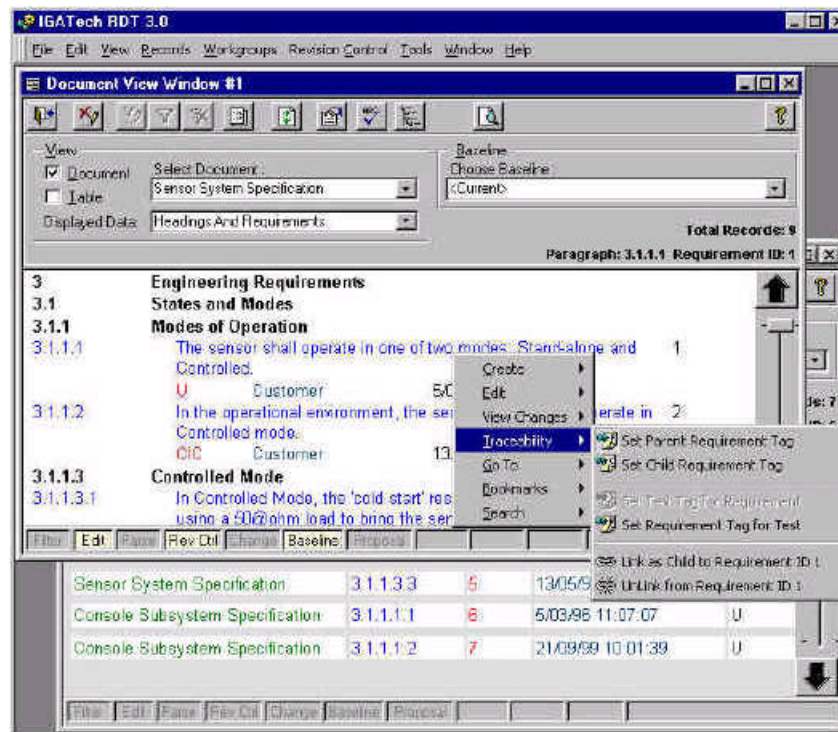
3. *Requirements Traceability*

a. *Shall be able to identify a requirement source*

Requirements can be traced from top level requirements down to the lowest level requirements. RDT removes the time-consuming task of manual requirement tracking.

- i) *Provide reference and links to source documents*

A graphical interface provides this. Furthermore, reports showing this information can be printed. Document Views allow data to be edited and linked in document context or tabular format. These views are fully user defined.



- ii) *Provide reference and links to use cases*
TBD

b. *Be able to trace requirements to Contractor's requirements, design, and test documents*

Requirements may be linked to other requirements or to tests with no link restrictions. The tool however enforces that rationale be entered where ever requirements are linked to other requirements or tests.

c. Accept trace data from Contractor's requirements management tool.

Through OLE, RDT will communicate with all OLE compliant applications. Furthermore, RDT will communicated directly with MS Word, Interleaf, and ODBC compliant databases including Oracle and SQL Server.

d. Shall trace to results in verification test reports.

Validation procedures can be mapped to requirements to address the method of verification.

e. Record actual verification results, if available

Calculations may be performed on attribute fields to obtain this information.

f. Shall identify untraced requirements

RDT provides integrity checks and reports to satisfy this need.

4. *Requirements Configuration Management*

a. Shall be able to baseline/rebaseline requirements

Baselines enable sets of data to be captured at a particular moment in time. Baselines can be struck for filtered sets of data, using the browsers, or on complete or specific document sections.

b. Shall be able to add and update requirements

i) Shall be able to input pending requirements along with comments.

Change Proposal Management enables a change proposal to be identified, and any data which will be added, changed, or deleted as a result of it being accepted.

ii) Shall track status of all pending requirements

TBD

iii) Shall output reports for the approval process

TBD

iv) Shall be able to record resolution of proposed requirement

TBD

v) When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.

TBD

vi) Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.

TBD

vii) Provide requirement version identification, such as by revision letter, date and time, combination of these, etc

Requirement changes are tracked and reportable.

viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*

TBD

ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*

RDT Version 3.0 provides full change/comparison analysis integrated in the tool.

c. *Shall be able to track requirements status*

i) *Shall provide entire requirement history (who, what, where, when, how)*

Revision Tracking allows users to look at all changes made to data, and when and by whom these changes were made.

5. Communication

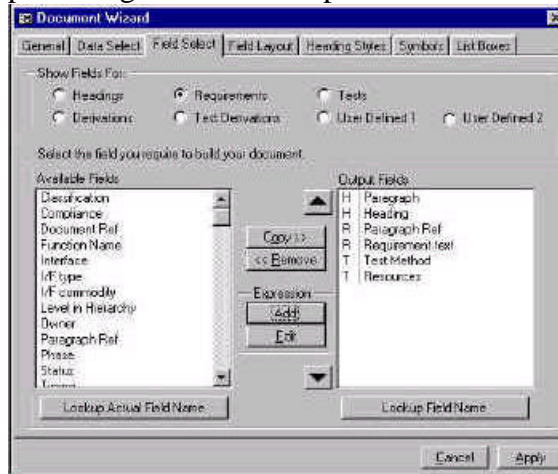
a. *Automatic email linking for discussion about requirements or changes*

Not available in this release

6. Requirements Outputs

a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

The document wizard allows you to quickly set up a document outline for producing user defined specifications directly into MS Word.



i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*

Documents may be generated such that no further editing is required. This includes figures, tables of contents, etc.

ii) *Synchronize database content with document*

TBD

- b. *Shall provide periodic status reports*
 - i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*
Available through use of attributes, and use of filters and queries. (May be printed)
 - ii) *Shall produce status report for configuration management*
Available through use of attributes, and use of filters and queries. (May be printed)
- c. *Support ad hoc reports*
Queries and filters are user definable and available for all data elements. These can be shared by other users if required, and saved for later retrieval.
- d. *May output reports or report data to MS Word, Excel, or ODBC-compatible databases*
Yes
- e. *May have WYSIWYG preview of finished outputs*
RDT allows users to view the document on screen prior to printing.

7. *Requirements Re-use*

- a. *Store common requirements in central location and export to other projects*
- b. *Support multiple project requirements*

8. *Shall be compatible with other tools.*

- a. *Support OLE copy and paste functions*

RDT supports OLE format data which may include any application supporting this standard.

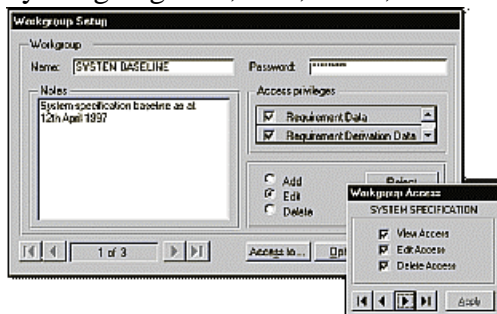
- b. *Database must be ODBC compliant*

RDT's database is ODBC compliant.

9. *Administration*

- a. *The tool shall have controlled access.*

Workgroup privileges allow you to baseline requirement, test, and derivation data by assigning Add, Edit, View, and Delete access to users.



- b. *There shall be user privileges based on type of user*
 - i) *Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.*

See above

10. *User Interface*

- a. *Shall have an intuitive user interface*
Graphical user interface using Windows standards.
- b. *Customize user interface for data entry of different types of data.*
TBD

11. *Environment*

- a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
RDT will operate on any PC using Windows 95, 98 or NT 4
- b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users*
RDT is installed on a PC and through network connection can support up to 225 concurrent users.
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*
RDT is a multi-user tool providing multi-access attribute and note data to be shared by concurrent users.
- c. *Installation should be simple*
TBD
- d. *Architecture*
Windows 95/98, Windows NT4, or Windows 2000
- e. *Database*
MS Access or Oracle

12. *Other*

- a. *Shall support open database system (standard query access)*
RDT is ODBC compliant.
- b. *Scripting capability*
This feature is only available through OLE Automation.
- c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer.*
Not available in this version. Igatech is developing a Web interface for the current version of RDT.

13. *Vendor support*

a. *The vendor should have training available.*

Yes

b. *What is the recommended training time?*

RDT training is conducted for one day. Users are expected to be proficient with using the tool by this time.

c. *The user documentation should be easy to follow*

TBD

d. *Should have on-line, context sensitive help*

RDT includes context sensitive on-line help. The on-line help includes the delivered hard-copy manuals.

e. *The vendor should provide good technical support*

Under maintenance, phone support is available during normal working hours. (Office is in Australia)

d. *Cost.*

a. *What is the initial cost?*

\$3,250 per copy

b. *What is the network license policy?*

RDT is available under a site licence with a floating licence.

c. *What is the warranty?*

Depends on country of sale

d. *What is the maintenance and upgrade policy?*

RDT has an upgrade policy of releasing a new version every 12 months. Further more, maintenance releases may be issued more frequently with bug fixes. Maintenance may be purchased on a yearly basis and entitles users to the new release and any maintenance upgrades and telephone or email based technical support. Maintenance is optional at \$730 per copy.

e. *What is initial cost for 3 seats?*

\$9,750 for three seats

e. *Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?*

IGATECH is an Australian-owned company, founded in 1983 to apply best practice information technology to create, sell and support business solutions. Our headquarters are located in Adelaide, South Australia.

Additional Features:

RDT can be used to generate compliancy against a tendered specification during a bid phase.

Once a Request For Tender (RFT) has been issued, potential contractors set about addressing all the clauses in the RFT as best they can. It is very important to address all the clauses, as an omission may work in favour of an opposing bidder. RDT can produce from a compliancy matrix to a full blown compliancy document, showing just how you will meet every clause in the contract. RDT will tell you which clauses have not been addressed. You can assign weightings to clauses and make sure that more time is spent addressing issues which are more important.

Summary

Advantages is that it is geared toward a Project Office doing acquisition and preparing and evaluating RFPs. It has automated document production to MS Word and is tightly coupled to Microsoft Office tool suite. The primary disadvantage is that it is a new tool and is supported from Australia.

Requirements Management Tool Requirements

RequisitePro 4.5

Company: Rationale
20 Maguire Road
Lexington, MA 02421-3104
USA

Website: www.rational.com/products/rs/analyst/index.jtmpl

Sales and product information hotline: **800-728-1212**

Tel. +1-781-676-2400

Fax +1-781-676-2410

E-mail info@rational.com

1. Requirement Definition

- a. Shall be able to specify database fields to be included in requirements definitions*
- b. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*
- c. Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

The database and documents are connected such that a simple double-click in the database will launch Microsoft Word and take you directly to that requirement in the context of the document.

- d. Shall support manual entry of requirements*
 - i) Be capable of storing and editing the full text of requirement statements with basic word processor functions.*
 - ii) Spell checking*
 - iii) Shall ensure data integrity through methods like menus, filters, and cross checks.*
- e. Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*
- f. Shall be able to import requirements from other tools using text-delimited files.*
- g. Be capable of maintaining links to external documents to facilitate requirements maintenance*

Requirement authors, contractors or others external to your organization can write, review, edit and approve documents separate from the project. The documents are automatically synchronized with the project when brought back online.

- h. Shall provide a means to unambiguously identify every requirement*
 - i) The user shall be able to define the identification scheme*
 - ii) The user shall be able to redefine the identification labels of existing requirements*

- i. *Shall be able to identify hierarchy of requirements*
 - i) *Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) *Graphical display for assigning and displaying hierarchy*
- 2. *Requirement Analysis*
 - a. *Shall be able to define custom categories/attributes to categorize and prioritize requirements*
Assigning attributes such as priority, difficulty, status, owner, and version number help you manage your requirements in a way that is impossible with documents alone. RequisitePro provides standard attributes and attribute values out of the box and is easily customizable to support your processes and terminology.
 - i) *Have custom attributes in pull down menus*
 - ii) *Shall be able to add a category or priority even after data is entered.*
 - b. *Shall be able to perform ad hoc queries on requirements*
- 3. *Requirements Traceability*
 - a. *Shall be able to identify a requirement source*
 - i) *Provide reference and links to source documents*
 - ii) *Provide reference and links to use cases*

Integrated Use Case Management is available in RequisitePro 4.5 and works with Rose 2000.

Rational RequisitePro 4.5, *Integrated Use Case Management* enhances Rose use case modeling with powerful requirements management capabilities. By extending use cases beyond diagrams with sortable attributes, documents, and traceability, *Integrated Use Case Management* helps manage large numbers of use cases across your team. This is the tightest and most robust integration in the market between a visual modeling tool and a requirements management tool.

Integrated Use Case Management begins by associating your Rose model with a RequisitePro project. This association provides the context for selecting use case document templates and use case attributes from the Rose environment. You can establish this association either at the model level or at the package level, where each package may be associated with its own RequisitePro project. The package association lends itself to large software projects that might use either multiple RequisitePro projects (typically one per subsystem) or different use case document templates (for business use cases vs. system use cases).

A RequisitePro project consists of a number of Microsoft Word documents and a database (Microsoft Access, Microsoft SQL Server, or Oracle) to organize the requirement information. Use case documents in RequisitePro contain use case textual descriptions, just like what you may be writing today. Requirements in these documents are linked to a database that stores

additional requirement information, such as attributes, traceability links, versioning, change history, project security, and more. From the RequisitePro database, you can query the requirement information to check coverage and measure the impact of change. You can also easily navigate to the RequisitePro Word environment and back to Rose.

Today, you may be writing use case documents and attaching them to your use case model via the Rose External File property. The new Integrated Use Case Management capability goes beyond simply attaching a file to a Rose use case. Because the documents attached to your use cases are RequisitePro documents, you benefit from the following advantages:

- *Use case documents are based on proven use case document templates.* Integrated Use Case Management provides Rational Unified Process use case templates. These templates contain informative guidelines as well as use case formatting, saving you time and providing consistency from document to document.
- *Requirement text is clearly marked.* Requirement text is visually differentiated from additional descriptive information in the document ([Figure 2](#)). This makes it easier to "see the trees in the forest."
- *Any modification to use case documents is automatically tracked.* Information about who modifies what, when, and why is stored in the RequisitePro database. These revisions help you gain control of use case changes.
- *Requirements in use case documents can be linked to other requirements they may relate to.* By tracing use cases to business requirements, tests, or even other use cases you can more easily measure the impact of change on related requirements and verify coverage.

To associate a use case document with a Rose use case, right-click on the use case in the Rose browser, and select *Use Case Document—New* from the shortcut menu. The RequisitePro Word environment is launched and your template-based document is displayed, ready for editing. You can also associate an existing RequisitePro document to a Rose use case by using the *Use Case Document—Associate* menu item.

- b. *Be able to trace requirements to Contractor's requirements, design, and test documents*
 - c. *Accept trace data from Contractor's requirements management tool.*
 - d. *Shall trace to results in verification test reports.*
 - e. *Record actual verification results, if available*
 - f. *Shall identify untraced requirements*
4. *Requirements Configuration Management*
 - a. *Shall be able to baseline/rebaseline requirements*
 - b. *Shall be able to add and update requirements*
 - i) *Shall be able to input pending requirements along with comments*
 - ii) *Shall track status of all pending requirements*
 - iii) *Shall output reports for the approval process*

- iv) *Shall be able to record resolution of proposed requirement*
- v) *When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.*
- vi) *Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*
- vii) *Provide requirement version identification, such as by revision letter, date and time, combination of these, etc*
- viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*
- ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*

c. *Shall be able to track requirements status*

changes made to a requirement are captured, tracking the evolution of the requirement throughout the project lifecycle.

- i) *Shall provide entire requirement history (who, what, where, when, how)*

5. *Communication*

a. *Automatic email linking for discussion about requirements or changes*

Team members can participate in online, e-mail-enabled discussion threads. To provide context, each discussion can be associated to a particular requirement, set of requirements or the project in general. Discussion group participation can be via the Web, the Windows client, and via e-mail, extending participation to include team members outside of Rational RequisitePro. Discussions serve as a change proposal system, providing an open, traceable mechanism to clarify issues, comment on suggestions, collaborate on ideas and notify of change.

6. *Requirements Outputs*

a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

- i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*
- ii) *Synchronize database content with document*

b. *Shall provide periodic status reports*

- i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*

Measuring your requirement data to obtain trend analyses, completeness reports, coverage assessments, and project status is now easier. By establishing filters, queries and reports on your project data, Rational RequisitePro's [Requirement Metrics](#) capabilities automatically process the information and output the report to Microsoft Excel, where you can create charts on the extracted results.

There are two types of reports available with the Requirement Metrics feature:

- *Static reports* use static filters and shows results capturing a "snapshot" in time.

- *Trend analysis* reports use time-sensitive filters that analyze changes over time.

Sample reports include:

- **Features by Risk**
- **Traceability Count**
- **Requirements by Creation Date**
- **Test Requirement Coverage**
- **Quality Trends**

- ii) *Shall produce status report for configuration management*
- c. *Support ad hoc reports*
- d. *May output reports or report data to MS Word, Excel, or ODBC-compatible databases*
- e. *May have WYSIWYG preview of finished outputs*
- 7. *Requirements Re-use*
 - a. *Store common requirements in central location and export to other projects*
 - b. *Support multiple project requirements*
- 8. *Shall be compatible with other tools.*
 - a. *Support OLE copy and paste functions*
 - b. *Database must be ODBC compliant*
- 9. *Administration*
 - a. *The tool shall have controlled access.*
 - b. *There shall be user privileges based on type of user*
 - i) *Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.*
- 10. *User Interface*
 - a. *Shall have an intuitive user interface*
 - b. *Customize user interface for data entry of different types of data.*
- 11. *Environment*
 - a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
 - b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users*
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*
 - c. *Installation should be simple*
 - d. *Architecture*
 - d. *Database*

Rational RequisitePro

- **Hardware**
 - 133 MHz or greater
 - 64 MB RAM
 - CD-ROM Drive

- **Operating Systems**
 - Microsoft Windows NT 4.0, Service Pack 3 or greater
 - Windows 98, or Windows 95, Service Pack 2 or greater
- **Disk Space** - 55 MB
- **Word Processor** - Microsoft Word 95, 97, or 2000
- **Database**
 - Microsoft Access 97,
 - Microsoft SQL Server 7.0, or
 - Oracle 7.3.4 (Oracle client software must also be installed on your PC)
- **LAN Support** - Any Windows-supported network
- **Requirements Metrics Reporting** - Microsoft Excel 97 or 2000
- Internet connection recommended for license and support services
- **Rational RequisiteWeb**
- **Server Recommendations:**
 - Hardware**
 - 200 MHz or greater,
 - 128 MB RAM,
 - CD-ROM Drive
- **Operating Systems**
 - Microsoft Windows NT Server 4.0, Service Pack 3 or greater
 - Microsoft Windows NT Server 4.0 Option Pack including Microsoft Internet Information Server (IIS) 4.0 and Microsoft Transaction Server (MTS) 2.0
- **Disk Space**
 - 42 MB
- **HTML Converter** - Microsoft Word 97 or 2000 (for Word 97, include installation option: Converters and Filters/Text Converters/HTML Converter)
- **Client Database** - Oracle 7.3 or later client software (for accessing projects in an Oracle database)
- **Client Recommendations:**
 - Browser** - Microsoft Internet Explorer 4.x or 5.x, or Netscape Navigator 4.x for Windows 95/98/NT or UNIX

12. Other

- a. *Shall support open database system (standard query access)*
- b. *Scripting capability*
- c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*

Rational RequisitePro provides you with a choice of interfaces: the standard Windows GUI or the Rational RequisiteWeb interface by which you can access and manage requirement data.

13. Vendor support

- a. *The vendor should have training available.*
- b. *What is the recommended training time?*
- c. *The user documentation should be easy to follow*
- d. *Should have on-line, context sensitive help*

- e. The vendor should provide good technical support*
- d. Cost.*
 - a. What is the initial cost?*
 - b. What is the network license policy?*
 - c. What is the warranty?*
 - d. What is the maintenance and upgrade policy?*
 - e. What is initial cost for 3 seats?*
- e. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?*

Requirements Management Tool Requirements

AnalystStudio V1.5 (includes RequisitePro 4.5)

Company: Rationale
20 Maguire Road
Lexington, MA 02421-3104
USA

Website: www.rational.com/products/rs/analyst/index.jtmpl

Sales and product information hotline: **800-728-1212**

Tel. +1-781-676-2400

Fax +1-781-676-2410

E-mail info@rational.com

1. *Requirement Definition*
 - a. *Shall be able to specify database fields to be included in requirements definitions*
 - b. *Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*
 - c. *Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*
 - d. *Shall support manual entry of requirements*
 - i) *Be capable of storing and editing the full text of requirement statements with basic word processor functions.*
 - ii) *Spell checking*
 - iii) *Shall ensure data integrity through methods like menus, filters, and cross checks.*
 - e. *Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*
 - f. *Shall be able to import requirements from other tools using text-delimited files.*
 - g. *Be capable of maintaining links to external documents to facilitate requirements maintenance*
 - h. *Shall provide a means to unambiguously identify every requirement*
 - i) *The user shall be able to define the identification scheme*
 - ii) *The user shall be able to redefine the identification labels of existing requirements*
 - i. *Shall be able to identify hierarchy of requirements*
 - i) *Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) *Graphical display for assigning and displaying hierarchy*
2. *Requirement Analysis*
 - a. *Shall be able to define custom categories/attributes to categorize and prioritize requirements*
 - i) *Have custom attributes in pull down menus*
 - ii) *Shall be able to add a category or priority even after data is entered.*
 - b. *Shall be able to perform ad hoc queries on requirements*
3. *Requirements Traceability*
 - a. *Shall be able to identify a requirement source*
 - i) *Provide reference and links to source documents*
 - ii) *Provide reference and links to use cases*
 - b. *Be able to trace requirements to Contractor's requirements, design, and test documents*
 - c. *Accept trace data from Contractor's requirements management tool.*
 - d. *Shall trace to results in verification test reports.*
 - e. *Record actual verification results, if available*
 - f. *Shall identify untraced requirements*
4. *Requirements Configuration Management*
 - a. *Shall be able to baseline/rebaseline requirements*
 - b. *Shall be able to add and update requirements*

- i) *Shall be able to input pending requirements along with comments*
 - ii) *Shall track status of all pending requirements*
 - iii) *Shall output reports for the approval process*
 - iv) *Shall be able to record resolution of proposed requirement*
 - v) *When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.*
 - vi) *Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*
 - vii) *Provide requirement version identification, such as by revision letter, date and time, combination of these, etc*
 - viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*
 - ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*
- c. *Shall be able to track requirements status*
 - i) *Shall provide entire requirement history (who, what, where, when, how)*
- 5. *Communication*
 - a. *Automatic email linking for discussion about requirements or changes*
- 6. *Requirements Outputs*
 - a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*
 - i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*
 - ii) *Synchronize database content with document*
 - b. *Shall provide periodic status reports*
 - i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*
 - ii) *Shall produce status report for configuration management*
 - c. *Support ad hoc reports*
 - d. *May output reports or report data to MS Word, Excel, or ODBC-compatible databases*
 - e. *May have WYSIWYG preview of finished outputs*
- 7. *Requirements Re-use*
 - a. *Store common requirements in central location and export to other projects*
 - b. *Support multiple project requirements*
- 8. *Shall be compatible with other tools.*
 - a. *Support OLE copy and paste functions*
 - b. *Database must be ODBC compliant*
- 9. *Administration*
 - a. *The tool shall have controlled access.*
 - b. *There shall be user privileges based on type of user*
 - i) *Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.*
- 10. *User Interface*
 - a. *Shall have an intuitive user interface*
 - b. *Customize user interface for data entry of different types of data.*
- 11. *Environment*
 - a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
 - b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users*
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*
 - c. *Installation should be simple*
 - d. *Architecture*

- e. Database*
- 12. *Other*
 - a. Shall support open database system (standard query access)*
 - b. Scripting capability*
 - c. A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*
- 13. *Vendor support*
 - a. The vendor should have training available.*
 - b. What is the recommended training time?*
 - c. The user documentation should be easy to follow*
 - d. Should have on-line, context sensitive help*
 - e. The vendor should provide good technical support*
 - d. Cost.*
 - a. What is the initial cost?*
 - b. What is the network license policy?*
 - c. What is the warranty?*
 - d. What is the maintenance and upgrade policy?*
 - e. What is initial cost for 3 seats?*
 - e. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?*

Requirements Management Tool Requirements Xties

Company: Teledyne Brown
Huntsville, Alabama
e-mail: xtie@pobox.tbe.com
phone: 800-933-2091 x 1995, 2122 or 1474
(205) 726-1000 x 1995, 2122, or 1474
fax: (205) 726-3414

1. Requirement Definition

- i) Shall be able to specify database fields to be included in requirements definitions.*

The use of attributes allows the user to capture the allocation of rationale, accountability, test/validation. criticality, issues, etc. With three types of attributes (Single-value, Multi-value, and Text Value) all possibilities are covered.

b. Shall support manual entry of requirements

- i) Be capable of storing and editing the full text of requirement statements with basic word processor functions including spell checking.*
- ii) Shall ensure data integrity through methods like menus, filters and cross checks.*

Pull-down lists may be created for attribute names, values, and paragraphs which eliminates the need for some typing, but spell and data dictionary do not exist in this version. PARTIAL

c. Shall be able to parse and import requirements from source documents such as State and Federal regulations

The user defines keywords and the tool automatically finds requirements that meet the keyword specifications.

Requirements are identified based on keywords or based on highlighting text with the mouse. Requirements may be identified and extracted automatically or identified and extracted based on interaction with the user.

d. Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.

e. Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.

The use of attributes allows the user to capture the allocation of rationale, accountability, test/validation. criticality, issues, etc. With three types of attributes (Single-value, Multi-value, and Text Value) all possibilities are covered.

f. Shall provide a means to unambiguously identify every requirement

g. Shall be able to identify hierarchy of requirements

- i) *Be capable of listing all the lower level (child) requirements from a given requirement.*

Requirement Links are displayed textually to show the relationships between requirements and the system structure.

- ii) *Graphical display for assigning and displaying hierarchy would be nice*

A graphical view of the system structure may be displayed to show the relationships between documents and their hierarchical structure.

2. Requirement Analysis

XTie-RT has 3 kinds of attributes to help classify requirements - Single-value attributes, Multi-value attributes, and Text value attributes.

- a. *Shall be able to categorize requirements (business function, type, source)*
- b. *Shall be able to prioritize requirements (priority, difficulty, feasibility, stability, risk)*
- c. *Shall be able to identify requirement status (validated, pending, approved, revision, etc)*
- d. *Shall be able to define custom categories/attributes*
 - i) *Custom attributes in pull down menus*
 - ii) *Shall be able to add a category or priority even after data is entered.*
- e. *Shall be able to perform add hoc queries on requirements*

3. Requirements Traceability

- a. *Shall be able to trace requirements to other requirements documents, design, and test.*

Links or lack of links may be shown from the requirements in the source document all the way to implementation by viewing the actual requirements on screen or on printed report.

- b. *Shall be able to identify a requirement source*
- c. *Shall identify untraced requirements*

XTie-RT can identify all requirements with no parent links, child links or peer links.

- d. *Shall record verification method and status (was it done, how was it done?) and*
- e. *Shall record verification results, if applicable, or trace to results in a verification report.)*

Verification of requirement (was it done, how was done). With XTie-RT, all the attributes values for a requirement and its links may be viewed in one window to show verification of a requirement.

Requirement performance verification from system elements (roll up of actuals). No Supported in this Version

4. Requirements Configuration Management

- a. *Shall be able to baseline requirements.*

Baselines of Documents may be made and kept for viewing and reporting.
Baselines may not be changed.

- b. *Shall be able to add a new requirement*
 - i) *Shall be able to input pending requirements along with comments*
 - ii) *Shall track status of all pending requirements*
 - iii) *Shall output reports for CCB to use in approving new requirements*
 - iv) *Shall be able to change pending to new requirement and annotate CCB approval*
- c. *Shall be able to update requirements*
 - i) *Shall be able to input pending change to a requirement with comments*
 - ii) *Shall facilitate impact analysis of changes by identifying all the lower level (child) requirements affected by the requirement change.*
 - iii) *It would be nice to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*
 - iv) *When a source document is updated, shall be capable of parsing input specifications, comparing with the previous version, and marking likely new requirements.*

Import capability allows for updating of requirements from external sources through batch processing, but cannot support Batch-mode document/source-link update.

- v) *Shall output reports for CCB to use in approving changes*
 - vi) *Shall output status report of changes*
 - vii) *Shall be able to track all changes to a requirement.*
- d. *Shall be able to track requirements status*
 - i) *Shall provide requirement history (who, what, where, when, how)*

A history log may be enabled for each document to log all additions, changes, and deletions of a requirement. The change made, who made the change and the date and time the change occurred by be logged. Why and How would be logged in a text valued attribute.

- ii) *Shall count total number of requirements by category and grand total*
 - iii) *Shall track number of requirement changes (new or updated) in a time period. Provide requirement version identification, such as by revision letter, date and time, combination of these, etc. Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups.*
 - iv) *Shall report number of requirements validated compared to total number of requirements.*

- e. *Shall be able to create new and alternate baselines.*

5. Communication

- a. *Automatic email linking for discussion about requirements or changes would be nice*

6. Requirements Outputs

- a. *Shall support generation of System Requirements Specification (SyRS)*

- i) *Shall generate file for MS Word for System Requirements Spec in prescribed format (modified IEEE 830 format)*

Presentation Output. Textual reports may be generated thru XTie-RT and graphical outputs may be generated using Crystal Reports, a product of Seagate, and imported into XTie-RT for use in directly in the application.

- ii) *Automatic generation shall include applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*

Custom output features and markings (user definable tables, figures, security markings ...) Report Titles and column headings may be defined using XTie-RT. Headers, footers and graphics may be created using Crystal Reports, a product of Seagate, and imported into XTie-RT.

- iii) *Shall Synchronize database content with document*

- b. *Shall provide periodic status reports*

- i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*

The use of attribute values allows for status and progress reporting

- c. *Support ad hoc reports*

Working sets are used to do ad hoc queries and searches. These are user-defined and may be saved for use at a later time. Find is also available for text searches.

- d. *Shall have WYSIWYG preview of finished outputs*

All output may be previewed on the screen just as it will appear on paper.

7. *Requirements Re-use*

- a. *Shall be able to store common requirements in central location and export to other projects.*

- b. *Shall support multiple project requirements*

8. *Shall be compatible with other tools.*

- a. *The tool shall be capable of sharing files from other tools.*

XTie-RT accepts imports of data in any delimited format. Exports may be done to other tools such as WORD, EXCEL, LOTUS. Data may also be exported to delimited files so that they may be imported by other tools. XTie-RT also accepts custom report formats created in Crystal Reports.

- b. *Be capable be capable of either controlling or being controlled by another tool (but not necessarily both) by means of an application program interface (API).*

Not supported in this version.

9. *Administration*

- a. *The tool shall have controlled access.*

Five (5) levels of access control are supported. Access privileges may even be set to allow the user full read/write privilege to everything with exception to specified attributes, where he will be.

- b. *There shall be user privileges based on type of user*

- i) *Be capable of restricting change authority for selected requirements to selected users or groups of users.*

- c. *Data shall be backed up routinely.*

10. User Interface

- a. *Shall have an intuitive user interface*

Doing one thing while you are looking at another. XTie-RT allows the user to perform simultaneous tasks. For example, a link may be created between two requirements, while also viewing data in another document that is unrelated.

Simultaneous update of open views. All affected views are updated when a change occurs. For example, an attribute value may be renamed and all open views containing that value will be updated simultaneously.

Interactive graphical input/control of data. Not supported in this version

Which window's standards do you follow? Windows 95

- b. *Shall be able to customize user interface for data entry of different types of data.*

11. Environment

Single user/multiple concurrent users. XTie-RT is available in a stand-alone or multi-user version. The multi-user version supports from 1 to 128 concurrent users.

Multiple platforms/Operating Systems. The XTie-RT server is supported on Windows 95, Windows NT, and Sun Solaris. The XTie-RT client is supported on Windows 95 and Windows NT. FULL

Commercial vs. unique database. XTie-RT is designed around a proprietary database. FULL

Memory requirements. Recommended amount for OS

CPU requirements. PC (486 minimum) for client and server

Disk space requirements. 8 Mbytes minimum

- a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
- b. *Shall support at least 5 concurrent users with protection against accidental simultaneous modifications of the same data.*
- c. *Installation should be simple*

12. Other

- a. *Shall support open database system (standard query access).*

No, queries on database items are done within XTie-RT.

- b. *Would be nice to have scripting capability*

Working set queries and report formats may be saved and used at a later time.

- c. *Would be nice if it had a web interface so we would not have to load a client application on everyone's computer.*

13. Vendor support

- a. *The vendor should have training available. What is the recommended training time?*

Formal training is not required. Using the tutorial, which is included with the software, a user can learn the tools basics in less than one day.

b. The user documentation should be easy to follow

Should have on-line help

Full reference manual is available as on-line help.

c. The vendor should provide good technical support

14. Cost.

a. What is the initial cost?

b. What is the network license policy?

c. What is the warranty?

d. What is the maintenance and upgrade policy?

15. Other

Summary of reasons to not select:

Have to use Crystal Reports to generate custom reports.

Has proprietary database, cannot do open queries.

Product Evaluation

AnalystStudio V1.5 (includes RequisitePro 4.5)

Company: Rationale
20 Maguire Road
Lexington, MA 02421-3104
USA

Website: www.rational.com/products/rs/analyst/index.jtmpl

Sales and product information hotline: **800-728-1212**

Tel. +1-781-676-2400

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Rational Suite AnalystStudio contains:

- Rational Unified Process, (knowledge base of software development best practices)
- Rational ClearQuest, (for change management)
- Rational RequisitePro, (requirements management)
- Rational SoDA (provides automated reporting and documentation)
- Rational Rose Modeler Edition (visual modeling tool)

The components of AnalystStudio provide a more complete requirements management solution, by automating the three major activities performed during effective requirement management: *collection of requests, management of requirements* as well as the *communication of requirements*.

1. Requirement Definition

Rational Suite AnalystStudio contains the Rational Unified Process*, an online knowledge base of software development best practices. RequisitePro, the requirement management component of AnalystStudio, provides an out-of-the-box project structure that complies with the Rational Unified Process software development recommended practices. That structure includes a set of document templates (glossary, vision document, use case specification, test plan, test case specification).

- a. *Shall be able to specify database fields to be included in requirements definitions*

Requirements are organized using user-definable requirement types. Using requirement types, users can create performance requirements, system requirements, marketing requirements, test requirements, etc. Each requirement type has its own set of user-defined attributes. Attributes such as weight, cost, throughput, etc... can be created.

- b. *Shall support non-textual formats by storing and editing the requirements in the specified format such as bit-mapped graphics, vector graphics, tables, equations, or formal logic notation.*

- c. *Shall be able to store and edit non-requirement items in the same manner as the requirement items of the same format and of associating them with requirements.*

AnalystStudio provides unlimited user-defined attributes of types: text, list (single or multi-value), integer, real, date, time, etc. Flexible traceability relationships can be established between any requirement types. The rationale of requirement can be documented via email-enabled discussion groups, Web-enabled elicitation as well as via integration with a full change request management tool (ClearQuest). By capturing requests over the Web, AnalystStudio makes it easy for stakeholders to stay involve and document their needs.

- d. *Shall support manual entry of requirements*

Requirements are selected by the user in MS Word document, and created using a right-click menu option. Upon creation, requirements are automatically entered into the requirements repository for analysis. Derived requirements are created either in Word documents or directly into the requirements repository. They are then traced to the source requirement either using a right click in a traceability matrix, or setting the requirement properties.

- i) *Be capable of storing and editing the full text of requirement statements with basic word processor functions.*

With its tight integration with MS Word, AnalystStudio provides Word text-checking features (spelling, auto correction, thesaurus, etc...).

- ii) *Spell checking*

- iii) *Shall ensure data integrity through methods like menus, filters, and cross checks.*

- e. *Shall be able to parse and import requirements from source documents in formats including MS Word, ASCII, and HTML*

AnalystStudio provides an import wizard to import requirements either from a Word document or a Comma-Separated Value (CSV) file. Word documents can be parsed for requirement extraction based on user-defined keywords, Word headings (including Word highlight), and text delimiters. CSV files provide an import of requirement attributes as well. The import facility is also available for a block of text in a document. Using a Block Create operation, the user can select a section of a document and parse requirements located in that section.

- f. *Shall be able to import requirements from other tools using text-delimited files.*

AnalystStudio provides an import wizard to import requirements either from a Comma-Separated Value (CSV) file.

- g. *Be capable of maintaining links to external documents to facilitate requirements maintenance*

Documents are live in the AnalystStudio project. Document updates are made within the Word interface of the tool, eliminating unnecessary import of documents, as document content changes.

- h. *Shall provide a means to unambiguously identify every requirement*
 - i) *The user shall be able to define the identification scheme*
 - ii) *The user shall be able to redefine the identification labels of existing requirements*
 - i. *Shall be able to identify hierarchy of requirements*
 - i) *Be capable of listing all the lower level (child) requirements from a given requirement.*
 - ii) *Graphical display for assigning and displaying hierarchy*

Sub-system allocations can be performed using requirement attributes, or using system implementation requirements that are linked to the requirements. Graphical traceability tree and matrix views the show relationships between system requirements and implementation.
2. *Requirement Analysis*
- a. *Shall be able to define custom categories/attributes to categorize and prioritize requirements*
 - i) *Have custom attributes in pull down menus*
 - ii) *Shall be able to add a category or priority even after data is entered.*
 - b. *Shall be able to perform ad hoc queries on requirements*
3. *Requirements Traceability*
- a. *Shall be able to identify a requirement source*
 - i) *Provide reference and links to source documents*

Flexible bi-directional traceability relationships is supported both for hierarchical and non-hierarchical requirements. Traceability links may be established intra and inter requirement document.

 - ii) *Provide reference and links to use cases*
- Rational RequisitePro 4.5, *Integrated Use Case Management* enhances Rose use case modeling with powerful requirements management capabilities. By extending use cases beyond diagrams with sortable attributes, documents, and traceability, *Integrated Use Case Management* helps manage large numbers of use cases across your team. This is the tightest and most robust integration in the market between a visual modeling tool and a requirements management tool.

Integrated Use Case Management begins by associating your Rose model with a RequisitePro project. This association provides the context for selecting use case document templates and use case attributes from the Rose environment. You can establish this association either at the model level or at the package level, where each package may be associated with its own RequisitePro project. The package association lends itself to large software projects that might use either multiple RequisitePro projects (typically one per subsystem) or different use case document templates (for business use cases vs. system use cases).

A RequisitePro project consists of a number of Microsoft Word documents and a database (Microsoft Access, Microsoft SQL Server, or Oracle) to

organize the requirement information. Use case documents in RequisitePro contain use case textual descriptions, just like what you may be writing today. Requirements in these documents are linked to a database that stores additional requirement information, such as attributes, traceability links, versioning, change history, project security, and more. From the RequisitePro database, you can query the requirement information to check coverage and measure the impact of change. You can also easily navigate to the RequisitePro Word environment and back to Rose.

Today, you may be writing use case documents and attaching them to your use case model via the Rose External File property. The new Integrated Use Case Management capability goes beyond simply attaching a file to a Rose use case. Because the documents attached to your use cases are RequisitePro documents, you benefit from the following advantages:

- *Use case documents are based on proven use case document templates.* Integrated Use Case Management provides Rational Unified Process use case templates. These templates contain informative guidelines as well as use case formatting, saving you time and providing consistency from document to document.
- *Requirement text is clearly marked.* Requirement text is visually differentiated from additional descriptive information in the document ([Figure 2](#)). This makes it easier to "see the trees in the forest."
- *Any modification to use case documents is automatically tracked.* Information about who modifies what, when, and why is stored in the RequisitePro database. These revisions help you gain control of use case changes.
- *Requirements in use case documents can be linked to other requirements they may relate to.* By tracing use cases to business requirements, tests, or even other use cases you can more easily measure the impact of change on related requirements and verify coverage.

To associate a use case document with a Rose use case, right-click on the use case in the Rose browser, and select *Use Case Document—New* from the shortcut menu. The RequisitePro Word environment is launched and your template-based document is displayed, ready for editing. You can also associate an existing RequisitePro document to a Rose use case by using the *Use Case Document—Associate* menu item.

b. Be able to trace requirements to Contractor's requirements, design, and test documents

Traceability trees are provided to view the complete path of relationships. A "Requirement Go To" feature aides navigation

- c. Accept trace data from Contractor's requirements management tool.*
- d. Shall trace to results in verification test reports.*

Querying of traceability relationships verifies requirement coverage. Requirements attribute tracked whom created the requirement, who implemented it and who tested it.

e. Record actual verification results, if available

Partial. Requirement attributes can be used to record "planned" vs. "actual" values. The AnalystStudio report tool can report on discrepancies between planned and actual results. Views of filtered information can be saved and recalled for project status analysis.

f. Shall identify untraced requirements

AnalystStudio's traceability interface provides easy-to-use query mechanism to efficiently detect "suspect" traceability links. The query interface allows flexible queries to find linked and unlinked requirements, and saving these queries makes the inquiries even more accessible.

4. Requirements Configuration Management

Rational RequisitePro and Rational ClearQuest, which provides full round-trip automation of enhancement requests and defect reports. This feature enables enhancement requests to be collected via the Web in Rational ClearQuest, and from them, requirements can be created in Rational RequisitePro. Associations are maintained between enhancement requests in ClearQuest and requirements in RequisitePro, providing an audit trail and traceability between enhancement requests, requirements, models, and test cases.

a. Shall be able to baseline/rebaseline requirements

Archiving capability is included with AnalystStudio, including version number, label, date, author, etc. Additional version control and CM via integration with Rational ClearCase, Microsoft Visual Source Safe, and Merant/Intersolv PVCS.

b. Shall be able to add and update requirements

ClearQuest is a Windows Change Request Management. Project leaders and managers improve their ability to dynamically track and analyze change requests

i) Shall be able to input pending requirements along with comments

ii) Shall track status of all pending requirements

ClearQuest is also highly customizable. Powerful administrative tools allow you to tailor nearly every aspect of the system, including the request process lifecycle, database field, user interface layout, reports, charts and queries. Can output data to answer:

- Does this software project meet our quality standards?
- Which key customer enhancements were implemented in this release?
- Is anyone on the project overloaded with high-priority requests?
- How fast are existing change requests being resolved and new ones reported?
- What is the find vs. fix ratio for last month?
- Can release x defects be attributed to specific modules or programmers?
- When will we be able to ship the next version?

- iii) *Shall output reports for the approval process*
- iv) *Shall be able to record resolution of proposed requirement*
- v) *When changing an existing requirement, identify all the lower level (child) requirements affected by the requirement.*
- vi) *Be able to set up groups of pending changes and then to enable the groups as certain circumstances, such as acceptance or approval, occur.*
- vii) *Provide requirement version identification, such as by revision letter, date and time, combination of these, etc*
- viii) *Provide a means to unambiguously identify the version of groups of requirements, such as by revision letter, date, combination of these, etc, and to save such groups*
- ix) *When a source document is updated, be able to parse input specifications, comparing with the previous version, and marking likely new requirements*

AnalystStudio provides a Word interface to document requirements in true Word documents. Document comparison is supported via MS Word's compare and merge utility.

c. *Shall be able to track requirements status*

- i) *Shall provide entire requirement history (who, what, where, when, how)*
Integral change history provided with automated capture of date, time, author, before and after contents, and annotated change rationale by author.

5. *Communication*

- a. *Automatic email linking for discussion about requirements or changes*

6. *Requirements Outputs*

- a. *Shall support generation of System Requirements Specification (SyRS) which will be created in MS Word in modified IEEE 830 format.*

AnalystStudio reporting tool is a Word add-in that supports generation of documents using any Word templates. Requirement metrics is output to MS Excel in both graphical format and textual format. Additionally because the requirement repository resides on a commercially available database (MS Access, Oracle or SQL Server), the user can create an ODBC data source and extract data to any charting software.

- i) *Automatic generation includes applicable document lists, acronym lists, test method cross-reference tables, and requirement source tables.*

Requirement documents, written in Word, are managed in-situ by AnalystStudio, and can be formatted using any MS Word functions. Reports from the requirement repository can also be extracted directly into a template-based Word document, using the Report Component of AnalystStudio.

- ii) *Synchronize database content with document*

b. *Shall provide periodic status reports*

- i) *Shall produce metrics such as number of requirements by category, number approved, number of changes, number pending, etc.*

Requirement metrics reporting and analysis to help evaluate the status, coverage, and trends of requirements data.

The user-interface driven query engine reports on traceability relationships, missing links, and filter requirements based on attribute values. Queries can be saved in personal or project-wide areas to apply the query at anytime on the current set of requirements.

ii) Shall produce status report for configuration management

Views of requirement information can be printed, exported. A requirement metrics feature allows for plotting of requirement data in MS Excel.

c. Support ad hoc reports

Multilevel queries can be saved and recalled by name. Personal queries as well as project-wide queries can be saved. A Find Requirement function is also provided to look up requirement by keyword.

d. May output reports or report data to MS Word, Excel, or ODBC-compatible databases

Yes

e. May have WYSIWYG preview of finished outputs

Because requirements are modified within a Word interface, requirements documents can be formatted using the full MS Word support for documents, print preview, etc.

7. *Requirements Re-use*

a. Store common requirements in central location and export to other projects

b. Support multiple project requirements

8. *Shall be compatible with other tools.*

a. Support OLE copy and paste functions

Yes, through MS products.

b. Database must be ODBC compliant

All database access is internally performed via ODBC. The query engine is driven from a point-and-click interface. Additionally, via the Extensibility Interface, an SQL-like query language is available to perform powerful queries against the database (MS Access, Oracle or SQL Server).

Customers can also write integrations with any other tools, using the Extensibility Interface (RPX), a COM-based API. The RequisiteLink Partner Program lists companies that are using the Extensibility Interface to write commercially available integrations.

9. *Administration*

a. The tool shall have controlled access.

User groups have specific security permissions. The security is granular enough to provide access rights at the document level, requirement level, requirement attribute level, as well as attribute value level.

b. There shall be user privileges based on type of user

i) Be capable of restricting change authority for selected requirements to selected users or groups of users. Envision three groups: administrative with all privileges for requirements and user data, user with read and

write capabilities on requirements, reviewer with just read capability on requirements and write capability for comments.

10. *User Interface*

- a. *Shall have an intuitive user interface*
- b. *Customize user interface for data entry of different types of data.*

11. *Environment*

- a. *Shall be accessible at worker's desk by desktop computers with Windows 98/Windows NT*
- b. *The tool should be scalable for a variety of project sizes*
 - i) *The tool should be able to operate on a desktop computer with a single user as well as operate from a file server with up to 10 concurrent users.*
Multiple concurrent users supported.
 - ii) *With concurrent users the tool shall protect against accidental simultaneous modifications of the same data.*

Directly supports MS Word documents linked to a requirements repository, providing full support for MS Word revision and security features. Support for email-enabled discussion groups to capture any dialog about new requirements, modifications of requirements, or any requirement-related topics. Offline authoring of requirement documents allow team members to take a document offline, work in a separate workspace and then bring back the document online to be merged with the previous version.

- c. *Installation should be simple*

d. *Architecture*

Windows NT 4, Service Pack 4; Windows 98; or Windows 95, Service Pack 2
Internet connection recommended for license and support services Netscape Navigator 4.x; Microsoft Internet Explorer 5; or Microsoft Internet Explorer 4.x, Service Pack 1

Required Software: MS Word95, MS Word97 or MS Word 2000

e. *Database*

Microsoft Access, Microsoft SQL Server, or Oracle

12. *Other*

- a. *Shall support open database system (standard query access)*

All database access is internally performed via ODBC. The query engine is driven from a point-and-click interface. Additionally, via the Extensibility Interface, an SQL-like query language is available to perform powerful queries against the database (MS Access, Oracle or SQL Server).

- b. *Scripting capability*

Partial. The API can be used to write scripts to modify the requirements repository programmatically. Also saving views with embedded queries automates routine reporting.

- c. *A thin or zero client is desirable. Would be nice if it had a web interface so we would not have to load a client application on everyone's computer*

A choice of using a Windows GUI or a Web interface with Rational RequisitePro to access and modify requirement data

13. Vendor support

a. The vendor should have training available.

b. What is the recommended training time?

95% of users require no tool training; an optional one-day course is available.

Requirements management classes are strongly recommended. Rational University provides a 3-day Requirements Management with Use Cases (RMUC) class. Rational local teams provide onsite training, and project assessments.

c. The user documentation should be easy to follow

A printed manual set plus online help system is included with the tool. A Let's Go wizard is provided to speed up newcomer's familiarity with the tool.

d. Should have on-line, context sensitive help

A printed manual set plus online help system is included with the tool. A Let's Go wizard is provided to speed up newcomer's familiarity with the tool.

e. The vendor should provide good technical support

Phone support is available in North America 800-433-5444, 408-863-4000, e-mail at support@rational.com

d. Cost.

a. What is the initial cost?

\$3295 node locked, \$6590 floating. Would probably get one node, two float at a cost of \$16,475.

b. What is the network license policy?

A license manager (flexLM from GLOBEtrouter) is provided with AnalystStudio. Can mix floating and node locked. We would most likely get one node locked and two floating licenses for each project.

c. What is the warranty?

Y2K compliant.

d. What is the maintenance and upgrade policy?

There is one major release and one minor release per year. Rational Suite reduces the total cost of ownership by shipping all tools in a synchronized release.

AnalystStudio comes with a year of support and free product upgrades.

SupportPlus subscription service includes unlimited technical support plus major release upgrade for fee of \$828 for node locked and \$1656 for floating seat.

e. What is initial cost for 3 seats?

Would probably get one node, two float at a cost of \$16,475.

e. Is the supplier stable? How long have they been in business? How long have they had this product? Who are its customers? What is its market share?

AnalystStudio is part of a \$411M company dedicated at providing a **complete lifecycle solution**, and out-of-the-box integrations between best-in-class products. Requirements management is one of the pillars of Rational's dedication to software development.

14. Additional Vendor comments

1. Rational is a ***leader in use case driven software development***. We provide hands-on classes on how to write effective use cases to improve the quality of requirements, and the communication with customers.
2. AnalystStudio allows management of system requirements as well as ***business needs*** that drive these requirements.
3. AnalystStudio provides a ***change request management*** component (ClearQuest) that facilitates scope management by providing a technology to gather consistently and completely all stakeholders feedback and consolidate this feedback into one single location linked to the requirements database.
4. AnalystStudio's requirement component (RequisitePro) is ***document-centric as well as database-centric***. This unique architecture provides the best of both worlds: the Word interface allows users to remain within a familiar interface to document requirements. The Views interface provides all the sorting, filtering capabilities of a database.
5. AnalystStudio is the easiest-to-adopt requirements management tool. It enables the ***entire*** team to ensure that requirements gathered by the analysts are being tracked to deliver the correct system/software. ***Team involvement*** in the requirements management process is ***key*** to delivering the right system.
6. AnalystStudio components are used by every member of the team (analysts, project managers, developers, QA engineers, testers, tech writers). The database views provide ***direct*** answers to team member-specific questions. Developers can view ***for themselves*** how many high-level requirements have been changed and measure ***by themselves*** the impact of that change on their detailed specifications. We believe that requirements management must be performed, to various levels, by ***everyone on the team*** to deliver a system that meets the customer's expectations. Consequently, the requirements management tool should be ***ease-of-use for everyone on the team***, not just the requirements engineers.
7. RequisiteWeb, as part of AnalystStudio, provides secured ***write-access to requirements information from a web browser***. Distributed teams and members of the extended team (key stakeholders, upper management, etc...) can view requirements away from the project network.